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RECORD

OF THE

EXPEDITION to ABYSSINIA

COMPILED BY ORDER OF THE

SECRETARY OF STATE FOR WAR

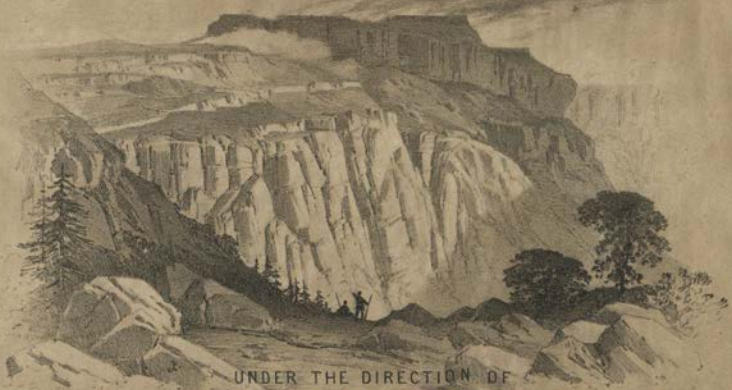
BY

MAJOR TREVENEN J. HOLLAND, C.B. BOMBAY STAFF CORPS

AND

CAPTAIN HENRY M. HOZIER, 3RD DRAGOON GUARDS

VOL. II



UNDER THE DIRECTION OF

COLONEL SIR HENRY JAMES R.E. F.R.S. M.R.I.A. &c.

DIRECTOR OF THE

TOPOGRAPHICAL AND STATISTICAL DEPARTMENT.

WAR OFFICE.

1870.

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CHAPTER XIII.

OPERATIONS FROM THE 10TH TO THE 20TH MARCH.

On the 10th of March, the following Order was issued authorizing Commissariat Officers to make issues and purchases on the public service on certificates on honour :—

Commissariat Officers authorized to make purchases on certificates on honour.

"The difficulties of obtaining regular vouchers for issues, and of making purchases "on a regular system of accounts, having been brought to the notice of the Commander-"in-Chief, and his Excellency being fully aware of the fact, hereby authorizes Commis-"sariat Officers to make all necessary issues and purchases, whether duly supported or "not, so long as they are *bond fide* on the public service (to officers and others with the "Force inclusive), such issues and purchases being considered as adjusted when supported "by the Commissariat Officer's certificate on honour of their correctness.

"All dead stock, such as empty boxes, cans, tins, and bags, not required for public "service, should be thrown away, and not carried, the transport of the Army, and the "circumstances of the campaign, not admitting of their disposal otherwise.

"This order to have retrospective effect from the date of the commencement of "the operations of each depôt and field commissariat."

On the 11th of March, savings banks were established, and the following Order was issued :—

Savings Banks Established.

"Savings banks will be re-established in British batteries and regiments serving in "this command.

"As it has happened that in some corps savings banks' ledgers have been left in "India, and that new ones cannot now be procured, the following system will be "adopted :—

"Deposits will be made once a month only.

"The amount deposited will be entered in the men's small book, and also in the day-"book ; the signature of the officer commanding the company being attached to the "latter entry.

"Each month's deposit will be kept separate, and interest will not be calculated or "added to principal until the end of the campaign.

"No withdrawals to be allowed.

"On the return of the regiment or battery to England or India, the company

"and regimental ledgers will be written up from the entries in the day-books and men's "small books, interest being calculated month by month, and added to principal every "three months. The accuracy of the accounts will be vouched for in the usual manner by "the Commanding Officer, second in command, and Adjutant, and then submitted for "audit."

Advance from Antalo.

On the 12th March, Sir Robert Napier left Antalo and moved southwards: with him marched three troops of the 3rd Light Cavalry, "A" Battery of the 21st Brigade Royal Artillery, the 10th Company Royal Engineers, the 4th (King's Own) Regiment, and two companies of Beloochcs. The Commander-in-Chief moved by the more westerly route, which led by Mashik and the Alaji Pass to the Atsala Valley, instead of by the one which had been unfortunately selected by the reconnoitring party, wasting the toil of the Pioneer force in needless efforts to render the rugged Gurubdek-dek Ravine and Mesno Hills passable for Artillery. In this unnecessary task several days were consumed before the easier route by Amba Alaji was adopted. The troops which moved with the Commander-in-Chief halted on the 12th at Masgah, and on the 13th at Mashik, where they remained for the following day, and assisted in clearing the route towards Masgah on the one hand, and Atsala on the other. The distance from Antalo to Masgah was 8¾ miles, from Masgah to Mashik, 8 miles; Mashik to Atsala, 9½ miles. The road from the Antalo camp of Buyah to Masgah led over the Chaffit plateau, which attains a relative height of about 500 feet, descended through a steep ravine to the Adi Kutani rivulet, and crossed the fertile valley watered by the stream. Thence, to the camp on the Mai Masgah was a distance of 3 furlongs over a rugged road. Immediately below the camp the river entered the gorge of Gurrub Kumayli, on both sides of which might be seen defences erected by Gobaze's troops, constructed of rough stones, whilst on the southern side of the river could be traced the remains of his camp. There were several small villages on the surrounding hills, but only small patches of ground were cultivated in the valley itself. From Masgah to the camp on the Mashik the road traversed an open undulating country, until, near the villages of Aibeto and Melato, it entered the valley of the Mai Mashik. It led either through the fertile cultivated bottom of the valley, or crossed the sparsely wooded hill slopes on its sides. The valley above the camp of Mashik was narrow for some distance; beautiful woods covered the mountain sides. Near the church of Bet Mara it again opened, and there were cultivated fields and plenty of forage. Beyond, the road ascended to the pass below Amba Alaji, a mountain stronghold of Waldo Yesus, which rose to a height of 800 feet above the Pass. The height of this Pass was about 10,000 feet. The descent into the valley of Atsala, 2,000 feet below it, proved rather difficult. Traces of zigzag road made by King Theodore could still be traced here. Atsala itself was a well cultivated valley, about a mile wide. Below the camp the river entered a gorge formed by spurs from the mountains on either side of it.

Amba Alaji.

Masgah.

Mashik.

Amba Alaji.

Sir Robert Napier himself, with a small escort of the 3rd Light Cavalry, made a double march on the 13th to Atsala, where he came up with one portion of the Pioneer force. Here he found the head-quarters and five companies of the 33rd Regiment, two companies of the Punjab Pioneers, and 150 sabres of the Sinde Horse. These troops were at once set to work to improve the roads. The Punjab Pioneers were sent to the top of the Alaji Pass to improve the road up the northern side; the 33rd worked between the top of the Pass and Atsala. By the evening of the 14th the whole road was cleared. Orders were sent back to Antalo that the Armstrong Battery of Artillery should at once move to the front on elephants, escorted by the main body of the Punjab Pioneers. On the

following day (15th March), the Commander-in-Chief halted in his camp on the Atsala, and the troops quartered there were employed in clearing the route towards Makan, over the steep hills of Debra Musa. On this day Sir Charles Staveley marched into Atsala with "A" mountain battery, the 4th King's Own, the Beloochees, and the 3rd Light Cavalry.

From Atsala, orders were sent that the Lowland Transport Train was to extend its operations and henceforth work as far as Adigrat, the Highland Train taking up the working from that station to the front. In the meantime two squadrons of the 12th Bengal Cavalry had left Senafè on the 9th and 11th March, and moved by double marches for the front, escorting 200,000 dollars and the Artillery reserve ammunition, and relieving the postal detachments between Adigrat and Antalo. The detachments so relieved proceeded to join their regiments in the front. The 23rd Punjab Pioneers left Adigrat on the 9th, the Naval Brigade on the 10th, and the Light Engineer Park on the 11th. The head-quarters and six companies of the 45th left Zula for the front on the 9th March. The left wing of the 3rd Native Infantry arrived at Adigrat on the 11th. The head-quarter squadron of the 12th Cavalry, with 100 camel-loads of Snider ammunition, arrived at Senafè on the 11th, and left, to move to the front by double marches, on the following day. It was reported from Antalo that the "B" Battery 21st Brigade, Royal Artillery, and the "K" company Madras Sappers had arrived there on the 13th March.

Lowland Train to work from Zula to Adigrat.

Movements of troops.

"At this time, the last return received from the Director of Transport Train, dated "8th March, showed that there were on that date, 4,682 Camels, 9,793 Mules, 954 Ponies, "4,278 Pack bullocks, and 534 Draught bullocks, in the train.

Captain Holland's Report of 14th March.

"Of these, 8,000 mules and ponies had been specially told off for duty with the "Highland Train, to work from Senafè to the front; the whole of these animals had "not, however, entered upon their duties in the highlands. There were, however, on "the above date 5,562 mules and ponies with the Highland Train, and of these, 684 "were reported sick. No return of the number of sick in the Lowland Train had been "received.

Strength of Transport Train.

How employed.

"The Lowland Train was fully employed in pushing commissariat and military "stores and troops from Zula up to Senafè; and it had now the assistance of 273 mule-"carts and 262 bullock-carts which had been brought into work.

"The strain upon that portion of the Transport Train working on the highlands had, "in a great measure been reduced by local transport procured for the conveyance of "Commissariat stores, such as flour, grain, &c., from Senafè to Antalo; large numbers of "native pack bullocks, mules, and donkeys were daily employed for this purpose, and the "system had, so far, been found to answer admirably. The natives in the neighbourhood "of Antalo, however, were not so willing to enter into an engagement for the conveyance "of supplies to the front, through fear of the Gallas, whose territory the army had now "entered. An officer had been sent to Berbera with directions to purchase as many "camels and donkeys as possible, and orders had also been sent to Egypt for a further "supply of transport animals of every description to replace casualties, and to reinforce "the Lowland Transport Corps, the strain upon which was still very great.

Local Transport.

Purchases in Berbera.

"The last report received (13th March) regarding the progress of the railway from "Zula to Kumayli showed 6 miles and 576 yards of the line to have been completed on "the 26th ult., leaving 5 miles 1,184 yards still to be completed.

Railway.

"The Commanding Engineer reported that many and great difficulties had had to be "contended against from the different descriptions of plant forwarded from India. He "stated that the rails received from Kurrachee differed in size from those sent from

"Bombay, that many of them were bent, and that the fish plates attached were not bolt-"drilled in a uniform manner. In addition to this, there had been a paucity of skilled "workmen and an insufficient amount of ordinary labour, on account of the number of "other works in hand at Zula, but orders had been issued for every available man to be "put upon this work The officers commanding at Zula and Senafè had been directed "to render every assistance in their power, by placing strong working parties at the "disposal of the Commanding Engineer.*

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* The following letters, dated the 11th and 18th of March, show in detail the progress made in some of the engineering works at Zula, and the difficulties to be met in carrying on the railway:—

Lieut.-Col. Wilkins' Report on Engineering Works at Zula, 11th March.

"Sir, "*Camp Zula, 11th March*, 1868.

"With reference to my letter of yesterday's date, concerning the railway, I have the honour to report this "morning for his Excellency's information, that the last piece of cutting and embankment where the line "debouches on to the Kumayli Plain from the rugged ground near the large torrent, is now being finished off. "Lieutenant Merewether's three miles of finished earthwork meets Captain Darrah's at this point, consequently, rapid progress in the works may be expected, if we can only get the line freed from the shipping.

Progress of Railway.

"2. Since the beginning of the month, two Cavalry regiments have been landed, and a very large number "of camels are being landed daily; this has much interfered with the landing of railway plant. The camels "are an intolerable nuisance, their debarkation is such a protracted operation, and the piers and lighters are "absorbed in the business.

"3. The Commissariat claims upon the railway service are so heavy, and, of course, their business takes "priority over everything else, even railway progress; night trains for railway plant must be run. This is "objectionable, but must be done.

"4. I am happy to say that this morning water was found in Lieutenant Merewether's well, made by "Madras Sappers, just at the junction of the works. The well is no less than 85 feet in depth, the water is "good, and with the well at the sixth mile, will water the working parties. Nothing, however, can be spared "for others.

"5. I will place one and a-half companies of Madras Sappers in the Senafè Pass to get out such boulders as "may be removed with safety, unless his Excellency would send up another company to the front.

"6. The No. 1 Company Bombay Sappers had better return to Zula; one company is always required "there.

"I have, &c.,

"(Signed) H. St. Clair Wilkins, *Lieutenant-Colonel*,

"*To Captain Holland, Assistant Quartermaster-General, Army Head-Quarters.*" "*Commanding Engineer.*"

Lieut.-Col. Wilkins' Report of 18th March.

"Sir, "*Camp Zula, 18th March*, 1868.

"In the Progress Report of Engineering Operations up to the close of last month, forwarded this day, his "Excellency Sir Robert Napier, G.C.S.I. and K.C.B., will observe the progress made with the railway up to "the close of last month.

"2. Although some progress, under the head of 'Completed Line,' has been made this month, with his "Excellency's permission I would suspend making any daily reports for a few days, until more progress under "this head can be shown.

"3. The mile and a-half near the seventh mile has been the heaviest on the line as respects bridges, "cuttings, and embankments, and also as regards plate-laying, owing to the curves. All these works have "been sadly retarded by an adverse combination of circumstances arising at the same time. The plate-laying "has never yet been delayed for earthworks, owing to the skill of the 23rd Punjab Pioneers, and the full "assistance of troops kindly given by the Zula Brigade authorities.

"4. The heavy earthworks were more than half finished when the Pioneers suddenly left for the front, "causing a derangement in Captain Darrah's works not to be remedied. Some of the 45th Sherwood Foresters "were subsequently employed on the earthworks, but by constantly changing them day and night. The "Army Works Corps on the railway were also reduced to 100 men, owing to most urgent requirements at "Zula on other engineering works, the brigade being unable to give any working parties. These, again, the "rails had been fixed over a long length, and required the skilled platelayers to adjust and ballast, when the "three hundred were suddenly left ill. The weather also became most oppressively close and hot. Combined with "these circumstances, the Commissariat required for some days extra trains. The engines were overworked, "and the most of the three in store, already old and worn, speedily succumbed, and had to go into the fitters' "workshops, and this robbed the railway of plant trains.

"The telegraph lines were complete and in working order to Adigrat, a distance of Telegraph
"101 miles from Zula, though interruptions constantly occurred by breaks in the line, lines.
"generally supposed to be caused by natives of the country, who stole the wire. The
"progress of the line onwards to Antalo was delayed on account of a want of poles; none
"suitable were procurable in the neighbourhood, and the transport animals were fully
"employed in carrying up provisions and moving troops.

"The 2nd Company Bombay Sappers and 53 Lascars had been placed at the disposal
"of Lieutenant St. John, R.E., Director of the Telegraphs, to assist in putting up posts
"and laying the wire.

"The head-quarters of the 10th Company Royal Engineers, including the photo- Photo-
"graphers and signallers, generally marched with the head-quarters camp. The photo- graphers.
"grapers had been employed in photographing plans and views, as well as surveys of the
"route onwards, prints of which were handed over to commanding officers of corps
"previous to the march. Ten non-commissioned officers and men of Her Majesty's 33rd
"Regiment had been instructed in the use of flags, for the purpose of signalling, and the Signallers.
"men of the 10th Company Royal Engineers had occasionally been practised with the
"army night signals.

"Lieutenant Le Messurier, R.E., with a party of the 10th Company Royal Engineers, Water
"had been engaged in improving the supply of water, and the arrangements for watering supply.
"animals at all the posts occupied by troops from Kumayli to the front.

"The supply of water at Kumayli, the largest depôt on the line, was now reported Kumayli.
"ample, and was distributed by means of six Norton's tube-wells, one Bastier's 2·5" chain-
"pump, one fire-engine, and six dipping-wells. At Upper Suru troughs and tubs had been
"fixed, and 18,000 gallons of water stored by the roadside, and a second road to lead to
"the supply made, to avoid the high road at any time becoming blocked up. A tube well
"had also been driven, which afforded pure drinking water, and a separate tank had been
"reserved for the native Shohos.

"At Undul the supply was also reported good. One Bastier's 2·5" chain-pump had Undul.
"been fixed and two Norton's tube-wells driven. Troughs and shoots had been erected to

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"5. The well at the sixth mile is only auxiliary to the Pioneer Wells in supplying the working parties with
"water. His Excellency will doubtless see that it is not an easy matter watering these working parties from
"wells three miles distant.

"6. There are now 648 men on the works at this end. Captain Darrah is about to shift camp again from
"the sixth mile, and he states to-day that, glad as he would have been of 500 men a week ago, the heavy work
"being just completed, he does not wish for more now, as he could not water them.

"7. Captain Darrah's works are now emerging into the plain again, and I am very hopeful for the future
"progress, and that the late most vexatious delay will not occur again.

"8. I have sent by the last mail to Bombay, enquiries as to the fifth and sixth engines, which have not been
"heard of here. I have desired that, if not already sent, new ones should be ordered out from England. I have
"also asked for three foremen platelayers.

"9. Please inform his Excellency that the Pile Pier is finished. It is 1,204 feet in length, but I would Pile Pier
"have carried it out much further had there been piles long enough. As it is, those at the head have been finished.
"driven to low water and joined above.

"10. In conclusion, I have only to express my grateful thanks to his Excellency for allowing the 23rd
"Punjab Pioneers to remain so long on the railway works. I shall take a further opportunity of expressing
"to his Excellency my sense of the skilful aid rendered to our public works by Major Chamberlain and his
"splendid corps.

"I have, &c.,

(Signed) "H. ST. CLAIR WILKINS, *Lieutenant-Colonel,*

"To Captain Holland, Assistant Quartermaster-
"General, Army Head-Quarters."

"Commanding Engineer."

"receive the supply from these wells, and one other dipping well had been dug, about "28 feet deep, with an average depth of about 4 feet of water in each.

Enderta. "At Enderta, half-way between Undul and Rahagedi, two wells of 30 and 40 feet "deep, had been dug in close proximity to the road, but no water reached. Small reserve "tanks had been made where the spring issued from the rock above, and ladders had been "erected against the face of the three cascades, so that the water above might be "more easily reached. At Rahagedi the drinking water for the camp ran from springs "into six tubs placed on stones, and tanks had been built by the road-side, from which "the water ran by its own gravity into 54 feet of troughing, erected for watering "animals.

Senafè Ghât. "At the foot of the Senafè Ghât arrangements for the water supply had been made, "and tanks had been dug, and four tubs placed for watering animals.

Senafè. "At Senafè the supply was ample, and had been well developed. Drinking water "was obtained from six Norton's tube wells; water for camp purposes was provided in "11 tubs fed by two additional Norton's tube wells. Water was supplied to the transport "animals in 80 feet of troughing, fed from a pond by a stone duct, and the surplus water "was utilized in irrigating the soldiers' gardens, which had been commenced at Senafè.

Adigrat and Antalo. "At Adigrat and Antalo the arrangements for water supply had been perfected."*

The march from Maschik to Atsala lay over one of the great passes of the country, about 10,000 feet in height, above which scowled sullenly the almost inaccessible

Amba Alaji. peak of Amba Alaji. The labour for baggage animals was very heavy, but, with good packing, they managed to ascend and descend without so much difficulty as might have been expected. The troops had by this time, from constant practice, much improved in their method of adjusting the loads on the animals; but many of the pack-saddles were of a very indifferent pattern, consisting solely of pads, across which the loads were slung in nettings called "sulleetahs." Some were not even supplied with means of securing the loads, and in going down steep descents, the weight would be jerked forward on to the neck of the animal, which almost immediately fell. The incessant halts caused by the consequent delays were most vexatious, and the march was often so much retarded, that it was at last recognised that on such roads the infantry of the army could only be considered as a large baggage-guard. In consequence, Sir Charles Staveley adopted the

Each soldier to lead a mule. system of distributing the regiments along the line of animals, and making each fighting man lead a mule. This reform was marked with success, for, though the track was steep, winding, and covered with loose stones, the march was accomplished in good time, and not a single load was left behind. Transport animals, unless provided with a driver each, are always under a great disadvantage in a rough country, from the necessity of tying them together in strings of three or four. Even with the most experienced and careful muleteers, this is a cause of much distress to the animals in passing over obstacles. The great advantage of a driver to each animal was amply demonstrated in Sir Charles Staveley's march to Atsala, as well as the freedom from falls or accidents of the mules which carried the batteries of the 7-pounder mountain guns. On the 16th March, the Commander-in-Chief, who from this time assumed in person the direction of the Pioneer Force, marched with it from Atsala to Makan, improving the road on the way. On arrival at the latter place, orders were sent back to Sir Charles

* Fortnightly report by Captain Holland, Assistant Quartermaster-General, to the Home Guards, dated the 14th March, 1868.

Staveley to march the following day to Bulago, and, halting there, to make the road practicable for the elephants which carried the mortars and Armstrong guns. On the following day the Commander-in-Chief halted at Makan, sending on five companies of the 33rd Regiment to Haya, half-way to Ashangi, to make the road practicable for mules to that place.

Fatigue duties performed by 33rd Regiment.

The 33rd regiment had constantly, since its landing at Zula, been employed on fatigue duties in making roads, improving approaches, &c. With 31 officers and 818 men, it left Kurrachee for Abyssinia on the 21st November, and arrived in Annesley Bay on the 4th December, 1867. Two companies, under Major Lacy, landed on the 7th, and occupied Kumayli, being the first detachment of a British regiment in Abyssinia. These two companies were employed in sinking wells. The head-quarters of the regiment remained on board ship till the 28th, when it was disembarked and encamped at Zula. Previous to this, one company had been sent on shore to catch stray mules, and to water and feed them. This company was joined by another after five days, and the two companies continued at that duty for 16 days, until all the stray mules were collected. When the regiment was on board ship, parties were landed twice a-day to take charge of the water tanks. The regiment finally moved up to Senafè in small detachments, the last arriving on the 12th January, 1868. At Senafè, large fatigue parties went out daily, cutting grass and wood, and road making, even the band and officers' servants were so employed. One company was sent to Goose Plain in charge of mules; from Goose Plain parties were sent out daily to protect the grass-cutters. Two companies assisted in making the road from Senafè to a short way beyond Focada. Two companies also made the road from Focada into Adigrat. One company went to the head of the Senafè Ghât, remaining there five days, cutting telegraph poles. From Adigrat, strong working parties were sent to the front, making roads. Wells were also sunk there by the regiment. From Dolo two companies made the road to the front. At Antalo the whole regiment was employed for five days road-making, clearing and preparing the site for the camp. The working parties were so strong that the band, as on a former occasion, had to go out. The left wing subsequently at that station assisted in making the fortification, working at it for three days. Large wood and grass-cutting parties were also sent out from Antalo for the Commissariat Department.

Two companies joined the Pioneer Force on the 4th March, under Brigadier-General Field. They assisted to make the road to Mesno; returning from Mesno to Masgah, they made the road to Antalo. They were employed for about a fortnight on this duty. From Antalo three companies worked back, clearing the road. The head-quarters of the regiment joined the Pioneer Force on the 10th March. From Antalo, three companies worked to the front, making the road up the hill. The day the regiment advanced two companies were employed as working parties. Two companies worked on the road from Makan to Ashangi. The day after the regiment arrived at Ashangi every available man (band included) was sent back to make the road, for about five miles.

Makan.

On the 17th March, in accordance with his orders, Sir Charles Staveley moved with his first brigade from Atsala to Bulago, and on the 18th pushed forward to Makan. The march from Atsala to Makan, a distance of about fifteen miles, was a very severe one, over a series of ascents and descents, which so sorely tried the baggage animals that many of those that accompanied the Pioneer Force broke down and had to be relieved of their loads, while a great number did not arrive till the following morning, though they left Atsala very early in the day. Three mountain-passes, separated from each other by the valleys of Aiba and Haya, had to be crossed in order to reach Makan, viz., the passes of Debra Musa, Debar, and Sahafti. Of these the Pass of Debar is the

most considerable and exceeds in height the Pass of Alaji. The mountains rising above this pass consist of granite, but to the south of it volcanic rocks prevail. It not only constitutes a geological boundary, but also a political one, for the countries to the south of it are tributary to the Wagshum Gobaze, and most of the inhabitants are Mohammedans. The difficulties of the road rendered a halt of the Pioneer Force necessary for one day. Advantage of this was taken to re-arrange the postal duties between the front and Zula. The mails were after this date carried by troopers of the 10th Bengal Cavalry between Zula and Senafè, and thence by troopers of the other Cavalry regiments, who were posted in small detachments along the whole line of communications. At the same time the transport for sick and wounded, which was to accompany the force beyond Antalo, was definitely decided upon; and it was arranged that dhoolies or dandies should be taken forward in the proportion of three to every hundred fighting men. On March 18, Sir Robert Napier, with the remainder of the Pioneer Force, marched to Ashangi. The last part of the road was found bad, but it was made practicable for mules by the Sappers and Pioneers as they marched. An order was sent back to Sir Charles Staveley to halt at Haya, and with his first Brigade to further improve the road, so as to render it practicable for elephants. Orders were also sent to Antalo for the head-quarter wing of the 10th Native Infantry to move to the front as soon as it was relieved by the 3rd Native Infantry, and on overtaking the elephants with the guns and mortars, to march with them as an escort. The Head-Quarter wing of the 45th Regiment and head-quarter wing of the 3rd Native Infantry were also ordered to move to the front as soon as possible. Reports came in from Zula that animals and followers for the Transport Train were daily arriving; also from the intermediate stations that the troops were quickly closing up to the front. The Head-Quarters and six companies of the 45th Regiment arrived at Senafè on 19th March, escorting a convoy of 300,000 dollars and of 400 rounds of ammunition per man, and pushed forward the next morning towards Adigrat. The 3rd Regiment Native Infantry arrived at Senafè on the 14th; two companies of Bombay Sappers and Miners reached Adigrat, from the same place on that day. The 23rd Punjab Pioneers, 485 strong, and the Naval Brigade, arrived at Antalo on the 16th, and on the 17th pushed forward with a detachment of Sind Horse, the "B" Battery of the 21st Brigade of Royal Artillery, and the left wing of the 33rd Regiment, which mustered 325 men, escorting 155,000 dollars. On the same day there arrived at Antalo small detachments of the 12th Bengal Cavalry, of the 3rd Light Cavalry, and of the Sind Horse, and the Royal Engineers engaged in the water supply, as well as the Engineer Park.

Postal Arrangements.

Sick Carriage.

Haya.

Ashangi.

45th Regiment arrive at Senafè.

Movements of troops.

By the 17th of March the following buildings had arrived at Zula from Bombay:—six Commissariat sheds, 120 feet by 24 feet each; one store shed, Ordnance Department; two store sheds, Land Transport; two store sheds, Engineer Park; one temporary hospital, with various quarters and outhouses, in all 21 buildings; one medical store depôt, and quarters for medical storekeeper, in all three buildings; two field powder magazines; six quarters, each for two officers; six ranges for European soldiers, each for thirteen men, with outhouses, in all six buildings; quarters for railway officers' servants, &c., in all ten buildings.

List of buildings at Zula.

Of the above there had been erected six Commissariat sheds. The only shed being erected at this time was the railway store shed.

The Commanding Engineer reported that these sheds would require about two months for erection; the materials were being landed.

Ten sheds, 100 feet by 24, of an inferior description, received from Aden, had also been put up. They were—Two for Native General Hospital, one for Chinese

carpenters, one for gowndies (masons) and smiths, one as a railway office and store; four for Commissariat Department, and one for the Ordnance Department, and three additional were being put up for the Ordnance Department.

Lake Ashangi.

The route from Makan to Lake Ashangi lay round the foot of the Sarenga mountain range covered with juniper trees and mimosas, which formed a thick jungle. The path was irregular and winding. After crossing a deep valley, the Ashara summit was gained, whence the first view of Lake Ashangi could be obtained. Much had been said of this lake, and it was expected to be a wide sheet of water. Such was not the case, it was only about four miles long and three broad, but it was surrounded by noble hills, which enclosed besides the lake, a luxuriant and fertile valley, covered with waving crops of standing corn, while numerous villages were clustered on the hill-sides, as if sentinels on the fertility beneath them. The uninhabited borders of the lake were treacherous and deceitful, being nearly everywhere morasses, into which men sank without notice, and where more than one sportsman, too intent upon his game, sank down, and with difficulty escaped without being suffocated. The lake, though fresh water, had no apparent outlet.

The villages in the vicinity of Lake Ashangi are perched on high *conical* rocks, or on elevated situations on the hill-sides, and are surrounded by fences of Kolqual, to defend them from the attacks of the Azebu Gallas, who live not far off, are professors of the Mahometan faith, and are bound by the laws of their tribe each to kill a Christian before they can take a wife. The inhabitants of the villages near the lake, though themselves Mohammedans, do not hesitate to retaliate, and thus bloodshed is common in this district.

Some stragglers from the army suffered at the hands of the Gallas, but probably more on account of their own carelessness in violating the susceptibilities of these people, than because of any desire of the Gallas to enter into hostilities with the British troops.

The distance from Makan to the camp at Ashangi was about fourteen miles.

Arrival of Major-Gen Russell.

On arrival at Ashangi, the Commander-in-Chief received a report that Major-General Russell had reached Zula. He was immediately ordered to assume command at the port of debarkation, and Brigadier-General Stewart was moved up the pass to take command of the post at Senafè.

Instructions for Officers commanding stations.

The following were the instructions issued by Sir Robert Napier for officers commanding stations on the line of march :—

"They must be careful to keep up friendly relations with the people of the country, "and must do their best to prevent any one under their command from illtreating them. "Particular care should be taken to make friends with the chief men of districts and "villages, who should, from time to time, be sent for, and received with a certain amount "of attention.

"The people of the country should not, however, be allowed to enter the camp,* and "police should be placed on duty by day and night to prevent them doing so, except they "are passed in by permission, as deputations, passengers, &c., or as small parties of "visitors anxious to see the camp.

"A spot close to the camp should be fixed upon as a market-place, and a flag hoisted "there, to show the people where they are to come to sell their goods. All provisions,

* Notice of this prohibition was ordered to be given by beat of drum in Abyssinian fashion, and also to be sent to chief men of villages in the neighbourhood of camp.

"and grain, wood, and grass should be brought to the market place, and private pur-
"chases in other parts should be forbidden.

"Grain and grass should only be bought by the Commissariat officer, or his agents,
"and an equal distribution of them made to the different corps and departments daily.

"No fire-arms should be allowed to be brought into the market; police should be
"placed on duty there to keep order, and a guard should also be near at hand.

"Every exertion should be made to get grain, wood, and grass brought in from the
"neighbouring villages in large quantities, so as to form, if possible, a reserve stock.

"The officers in command of stations, whilst making every provision to ensure the
"safety of their camps, must be especially careful that guards are not unnecessarily
"strong. By day but few sentries can be required, and it would be better, therefore, to
"reinforce guards at night, instead of mounting at once the total number of men required.
"Should there be a necessity for a strong day guard, of course officers commanding
"stations will act on their own discretion in this matter.

"Cavalry piquets, pushed forward to a good distance from camp, are the most efficient
"protection against surprise in a country such as we are at present campaigning in.

"The vedettes should be ordered to patrol right and left along the arc of a circle, of
"which the camp should be considered the centre.

"The troops in camp should be instructed how to act in case of a night attack, the
"signal for a general turn-out being 'the assembly,' which should never sound at other
"times, not even at Light Infantry drill, when the word of command can be employed
"instead of the bugle sound.

"Orders should be issued for the guidance of camp followers in the event of a night
"attack. Mulcteers and horsekeepers should be made to stand to the heads of the
"animals in their charge, and all other followers should have a distinct post assigned to
"them, where they must remain until the troops are dismissed to their lines. It will be
"the duty of the Provost-Marshal and his assistants to keep order amongst the followers.

"Strict orders should be given that no soldier is to fire without a distinct order from
"his commanding officer.

"The assembling for a night attack should be practised once or twice by daylight,
"and then when the Officer Commanding is thoroughly satisfied that every fighting man
"and follower is acquainted with his post, the troops should be occasionally turned out
"after dark.

"Troops should be accustomed to moving over broken ground and up steep ascents
"as often as practicable.

"Light Infantry movements should be specially practised, and soldiers should be
"instructed, when in skirmishing order, to be careful not to waste their ammunition. By
"taking advantage of ground a line of skirmishers should be able to push that of the
"enemy back, almost without firing a shot. No skirmisher should fire unless the odds are
"in favour of his hitting his man. The duty of the officers and non-commissioned officers
"will be to see that the privates act up to these instructions.

"A Provost-Marshal, with an efficient establishment, must be appointed to every
"standing camp. The camp police will be under his orders. Natives of the country
"should never be flogged, except with the approval of the Chief attached to the station
"for the settlement of disputes, &c.

"At stations where depôts have been formed for the reception of soldiers pronounced
"temporarily unfit to accompany their regiments, daily inspections should be made of
"such men by the Senior Medical Officer, in order that all who are fit for duty should
"take their turn of guards, fatigues, &c. No officer, non-commissioned officer, or

" private, on the sick list, should be permitted to proceed to the front with the regiment " or corps to which he belongs, as sick carriage is intended for the conveyance of those " who fall sick on the line of march, and who consequently must be carried on, and not " for those who are on the sick list when the order to march arrives. Whenever a non- " commissioned officer or private who has been left behind sick is pronounced fit for duty, " a medical Committee, if possible, should be assembled to report as to whether he is fit " to join his regiment at the front; and all who are declared so should be forwarded, as " opportunity offers, to the stations in advance, for ultimate delivery to the corps or " regiment to which he belongs.

" The forwarding of provisions to the front by local transport should be carefully " watched, and every exertion made to keep up a constant supply.

" When convoys of mules arrive at a station, and halt there for one or more days, the " officer commanding the station should make it his duty to inspect them closely, in order " to ascertain that they have been properly attended to whilst on the march. Should it " appear that there has been any neglect on the part of any officer belonging to the " Train, a strict enquiry should be instituted, and a report made to head-quarters of the " circumstances of the case."

CHAPTER XIV.

OPERATIONS FROM THE 20TH TO THE 23RD MARCH.

Mussagita.

On 20th March, Sir Robert Napier, with the main body of the Pioneer Force, marched from Lake Ashangi, over the plain of Wofela, to Mussagita. The distance was short, not more than eight miles, and the road was not bad according to Abyssinian estimate, except for the first few hundred yards.

Womberat chain.

The pass beyond Mussagita, leading over the Womberat chain of hills to Lat, was reported to be very difficult; therefore two companies of the Pioneers and two companies of Bombay Sappers were moved forward on the 20th to improve it, and the Commander-in-Chief halted on the 21st at Mussagita, sending forward a wing of the 33rd Regiment to assist them in their labours. On the 22nd, the A Battery of the 21st Brigade of Royal Artillery, and four companies of Beloochees, under Sir Charles Staveley, marched in one day from Ashangi, and joined the Commander-in-Chief at Lat. The distance from Mussagita to Lat was nearly seven miles, a steep and rugged zigzag up to the village of Adi-Woka. The road ran along the hill side, and was narrow and dangerous. Some laden mules fell over the precipitous rocks on this march. From Adi-Woka the road led by another rugged and steep fall to the ravine and thence across the Womberat range to the valley of Lat. Here arrangements were made to complete, if possible, the Highland Transport Train to the strength ordered of 8,000 mules, south of Antalo.

Transport Train arrangements.

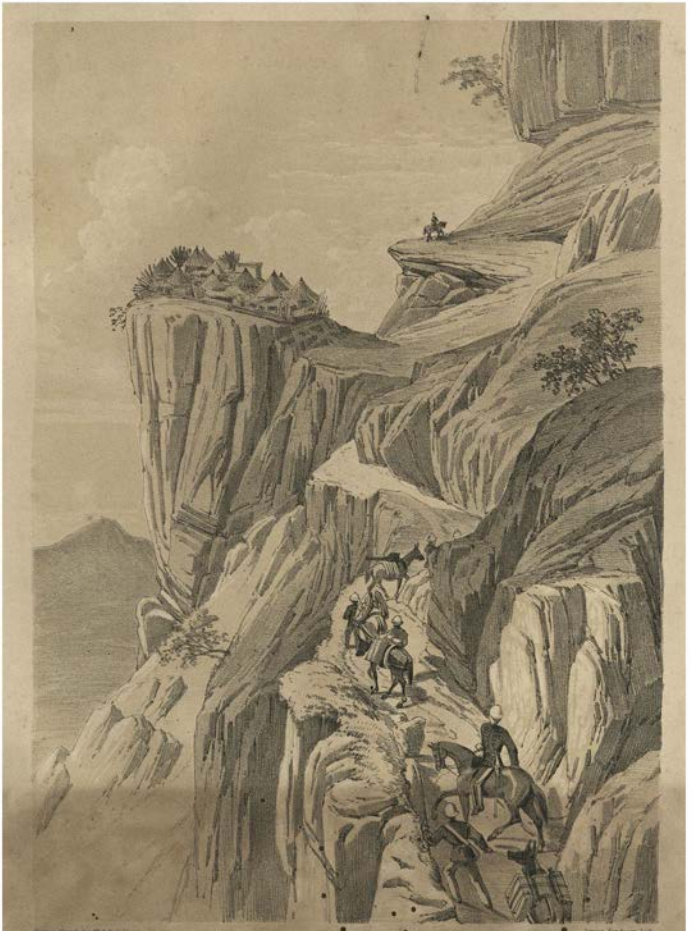
It consisted, as stated in Chap. XI., of four divisions, each division consisting nominally of 2,000 mules, but, as at Lat, measures were adopted for striking sick and non-effective animals off the muster-rolls, and placing them in stationary hospitals or depôts along the line of communications: in the further advance the Highland Train actually counted only about 6,000 efficient mules. To each division were attached one Captain and three Subalterns, while the whole was under the command of Captain Hand, of the 82nd Regiment, who was responsible alone to, and received orders from, the officer at head-quarters conducting the duties of Quarter-master-General. Three permanent staff officers were attached to the Train, one of whom worked under Captain Hand at Head-Quarters; one was stationed at Antalo and one at Adigrat. It was the duty of these officers to supervise the gear, the arrangement of convoys, the hospitals and depôts, and to replace mules who arrived sick, footsore, or galled, by sound ones from the depôts at their disposal.

Highland Train.

Inspecting Officer.

There was besides an inspector, who continually passed up and down the line from station to station, took care that the proper arrangements were properly carried out, and reported daily confidentially to the Assistant Quartermaster-General at the Head-Quarters of the Force. By this time also the muleteers who had been despatched from Persia, Syria, and Egypt had been almost entirely replaced by natives of India, who could understand and be understood by their officers and by each other. A considerable proportion of the new muleteers were Punjabees, who had acquired experience in the mule trains of Lahore and Rawal Pindee, and were disciplined and armed; while for the others native arms were bought, which placed them on an equality at least with the Abyssinians. It was learnt from the experience of

Punjab muleteers.



VILLAGE OF ARY TOKA

(Between Passaghis and Lar.)

Published at the TOPOGRAPHICAL DEPOT of the WAR OFFICE

Under the Direction of Lieut. Col. SIR W. JAMES, K.C.B. Quarter Master General

this campaign that it is of great importance that the drivers of a transport train should be armed, as they are then enabled to dispense to a great extent with escorts, especially when the animals are sent out to graze; the side-arms are also available for cutting grass. Advantage of armed muleteers.

At Lat new arrangements were made for the distribution of the troops, and it was ordered that all should proceed without baggage. The First Brigade was now to consist of the Head-Quarters, 3rd Sind Horse; A-21 Steel Battery; 33rd Regiment; Head-Quarters and six companies 23rd Punjab Pioneers; 10th Company Royal Engineers; and Head-Quarters wing, 27th Native Infantry. The Second Brigade consisted of the Head-Quarters, 3rd Light Cavalry; B-21 Steel Battery; Naval Rocket Brigade; and the 1st Battalion 4th King's Own Royal Regiment; and the Third Brigade, whose duty it was to make the road onward to Magdāla practicable for laden elephants, and to join the First and Second Brigades as soon as that work had been accomplished, consisted of four guns G-14 Royal Artillery, Nos. 3 and 4 Companies Bombay Sappers and Miners, two Companies Punjab Pioneers, two 8-inch mortars of 5-25 Royal Artillery, K Company Madras Sappers and Miners, one Company of the 33rd, and a Company of the 4th Foot. Re-distribution of troops, and advance without baggage.

It had been no easy task to bring the four guns of the G Battery 14th Brigade up as far as Lat; and all ranks in the battery had worked hard under their indefatigable Commander, Captain Murray, to accomplish this end. As far back as December 22, 1867, the battery had left Zula, and marched to Kumayli. The road, for the first half of the distance, was then over a deep sandy plain; and the gunners had hard work in spoking the wheels of the carriages. They arrived in camp, however, without a single man having fallen out. The horses were not allowed to be watered at Kumayli, but were marched off in the afternoon, with the drivers, to Suru, *en route* for Senafe. From December 23 to the early part of February, the head-quarters of the battery, with the guns and wagons, had remained at Kumayli. The gunners were employed in Transport Train work, a detachment being sent to Zula to fit harness and packs for mules, and the remainder kept at Kumayli breaking in mules for draught, and rescuing stray animals from starvation. As many as 300 mules were at times in the battery lines, where they were groomed and fed, and, when fit for work, handed over to the Transport Train. During this time, the battery also relieved the station of Hadoda, some 6 miles distant, of a heavy quantity of Commissariat stores (1,200 camel loads and 118 cart loads), the mules sent out from Zula to be broken into harness being employed for this work. A week in the hands of the G Battery 14th Brigade made them quite tractable. The horses during this time were at Senafe. March of the G-14 Royal Artillery with the Armstrong guns.

On the 4th February, the battery left Kumayli at 9 o'clock in the morning, with six guns, forge and store carts in bullock draught, and marched to Upper Suru, where it arrived at 9 P.M., having been six hours in getting through the pass. The bullocks did very well on level ground, but as soon as they came to any difficulty they gave in, and in the end they had to be taken out, and, with the assistance of a party of the 25th Native Light Infantry, sent out by Lieutenant-Colonel Little, the carriages were dragged up the pass by hand. On the 7th the battery arrived at Goose Plain. The horses were waiting on the Senafe Ghât, and took on the carriages, and on the 10th it marched to Guna-guna; on the 11th to Focada. The road was rugged and narrow; in several places there were not 6 inches to spare between the outer wheel and the edge. The shaft horse of one of the guns was killed, the whole team having been dragged over the side by one of the centre horses slipping. In one place the men had to go to work with entrenching tools, the road being only 5½ feet wide, while the axle-trees were 6 feet 10 inches. On the 16th the battery marched from Focada at 9 A.M., and, on reaching the top of the Kharsaba Ghât the men took out the horses, and let the

carriages down over the side of the ghât by means of drag-ropes. It took two hours getting the battery down. The gunners had severe work, their number only allowing the formation of two detachments. Each detachment had to make four trips down the ghât, which was so steep and rough that the men in the shaft were several times taken off their legs. The battery arrived at Adigrat at 4 P.M., without accident to the men or damage to the guns. Two guns were left to protect Adigrat, and the remainder of the battery left Adigrat and arrived at Antalo on the 2nd of March. On the 11th, the elephants arrived, and commenced training. Sheers had been sent from India for the purpose of loading, but the tackle sent with them was found rotten and useless, and some of the rope too large to admit of reeving through the blocks, so the men had, on each march, to load and unload the carriages by hand, increasing greatly the amount of manual labour to be performed. On the 18th, the battery marched to Masgah on wheels; and on the next day to Mashik. On the 20th, they marched to Atsala, the battery on elephants. On the 21st to Makan. The elephants left at 8 A.M., and arrived at 11·30 P.M., except one, which had to be left out for the night, at a place 6 miles off, with the Serjeant-Major and two gunners, the animal totally unable to proceed. They came into camp next morning. On the 23rd, they marched to Ashangi; left at 7·30 A.M., arrived at 4 P.M. On the 24th, they marched to Lat; left at 7·30 A.M., arrived at 6 P.M.

Services of Silladar Cavalry.

Among the Silladar Cavalry Regiments, the 3rd Regiment Sind Horse had perhaps to perform the most arduous work in Abyssinia up to this time, owing to the casualties in the 3rd Bombay Cavalry and the late arrival of the 10th and 12th Bengal Regiments.

3rd Regiment Sind Horse.

This regiment marched from Jacobabad on the 28th October, 1867, *en route* to Kurrachee, and on that day was of the following strength:—6 British officers, 20 Native officers, 438 non-commissioned rank and file, 458 horses, 15 officers' horses, 437 followers, 189 ponies, 158 camels, 42 bullocks (subsequently 339 ponies, 38 bullocks), and 12 asses.

As soon as the first ship conveying the regiment reached Annesley Bay, the detachment on board was landed and sent on to Senafé. On the 5th February, the Head-Quarter Detachment marched on Adigrat, and formed the escort of the Commander-in-Chief. 25 sabres were detached to Senafé, 50 to Guna-guna, and 50 to Focada. Detachments were also posted at Mai Wahez, Dongolo, Agula, Mai Makdum, Dolo, and Eikullet, for postal and convoy duties.

In addition to the above duties, the officers and non-commissioned officers detached, assisted the Commissariat Department; purchases and issues to a very large amount were entrusted to them; in the aggregate, many thousands of dollars passed through their hands. They performed these novel and trying duties satisfactorily, and no complaint was made either on the score of efficiency or of perfect integrity.

On the 20th February, the regiment arrived at Antalo, and formed part of its first garrison, performing at the same time the postal duties between Senafé and that place.

On the 4th March, the regiment marched on Atsala, and on the 6th of the same month made a most trying march from Mai Mesno to that place over a mountain, the ascent and descent of which were the most difficult pieces of ground met with in Abyssinia, so bad were they that the baggage did not arrive for thirty hours after the regiment; this route was, as stated in Chapter XII, afterwards abandoned.

10th Bengal Cavalry.

The 10th Bengal Lancers (2nd Hodson's Horse) sailed from Calcutta in December, 1867, and January, 1868; disembarked at Aden, and remained there till the 28th February, when the first detachment re-embarked, and by the 15th March the entire regiment had landed at Zula.

The composition of this corps was as follows :—Two troops of Sikhs, one of Punjabee Mahomedans, one of Afghans, one of Punjab Hill Rajpoots, and one of Jats. Thus there was one Sikh, one Mahomedan, and one Hindoo squadron; in the Hindoo squadron, however. there were many Sikhs, supernumeraries in course of absorption. Organization.

The arms of the regiment were lance, sword, and pistol, with the exception of eight men per troop, who, in lieu of the lance and pistol, had carbines.*

The strength of the corps was 11 British Officers, 13 Native Officers, 54 non-commissioned officers, and 390 rank and file. Strength.

This regiment was on the same system as all the Bengal Cavalry, *i.e.*, Silladar; 20 Bargeers being allowed throughout the regiment, the remainder being "Khudaspeh."

The Head-Quarter Wing of the regiment reached Dildi on April 14th; this was the farthest point reached by the regiment. On the march up, one troop was left at Antalo, one at Ashangi, one at Senafe, and two troops remained at Adigrat, from which troops, detachments were left at each stage between the sea and Adigrat, to carry the mails.

The duties performed by this corps were exceedingly arduous, although it was never engaged with the enemy; they consisted almost exclusively of escorts and guards, in addition to the postal duties already mentioned. Services.

The loss amongst their horses was great, as in addition to the hard marching, they had to contend against bad forage, and frequently were without corn: 457 horses embarked at Calcutta, and 13 were received in Abyssinia, making a total of 470: of these only 191 returned to India, showing a total loss in horses of 279. After landing in India, several horses of those that returned died from the effects of the sea voyage.

At Lat it became necessary to make another and final reduction of baggage and camp equipage. All followers, excepting those absolutely necessary for carrying sick and attending on hospitals, had already been discharged. The baggage, originally considerably reduced by the Quartermaster-General's Department at Zula and Adabaga, was now finally dispensed with, and all kits of officers, non-commissioned officers, and rank and file, were left behind, arrangements being made for their safe custody. Reduction of baggage and camp equipage at Lat.

Tents were allowed only in the proportion of one bell-tent to every twelve officers, and one to every twenty non-commissioned rank and file. Major-Generals commanding divisions were allowed one tent, and Brigadier-Generals were allowed one tent for themselves and for their personal and brigade staff.

Hospital tents were allowed to each regiment, battery, or detachment, according to the recommendation of the Principal Medical Officer only, and with these exceptions no other tents were taken for any purpose whatever.

The 33rd and Belochees took entrenching tools sufficient for one company each. A light hospital establishment accompanied each detachment, and all sick men and sick horses were left behind.

Fifteen days' rations, according to the following scale, were carried by each detachment and battery:— Revised scale of rations.

Europeans.		Natives.	
Biscuit or flour	1 lb.	Flour	1 lb.
Vegetables	2 oz.	Ghee, if purchased locally ..	2 oz.
Sugar	1½ „	Salt	½ „
Tea	½ „	Vegetables (once a-week) ..	2 „
Rum	1 dram		

* Information regarding the organization, arms, accoutrements, &c., of the Sind Horse has been given at page 186, Chapter VI.

The Commissariat took on sufficient rice to meet casual demands, and made arrangements for rationing staff officers and their followers for 15 days.

No private baggage animals were allowed to follow the column under any pretext whatever. Carriage was allowed for cooking-pots of officers in the proportion of one mule to every twelve officers.

Weight of baggage per mule reduced to 100 lbs.

No baggage mule proceeding with the force now carried more than 100 lbs., except in the case of boxes of small-arm ammunition and tents, when two of each were the load; 4 lbs. of grain was carried, in addition to the 100 lbs., to complete the day's ration.

Commissariat Officers made up the weight of their ration bags, and vegetable boxes to 50 lbs. each.

The cooking-pots of batteries and detachments were carried in the proportion of 50 lbs. weight to each company or troop.

Clothing of troops.

Troops marched in serge or Khakee clothing, according to brigade arrangements (the suit of clothing which was not worn was carried for the soldier), and carried one blanket and a waterproof sheet in addition to the great coat and canteen.

Records left behind.

Officers who did not possess riding-animals had two blankets and a waterproof sheet carried for each, under regimental arrangement. All records, company's books, &c., were left behind.

Sick carriage.

Sick carriage was taken on in the proportion of three dhoolies per cent. of all ranks. All dhoolies, however, were brought on in the rear of the whole baggage of the brigade.

One man, inclusive of muleteers, was told off to every mule to lead him during the march; and if any load required readjusting, assistance was given him by the man in rear.

Movements of troops.

It was from Lat that the real rapid advance on Magdala began. Up to this point the Commander-in-Chief had been merely making his steady preparations, which enabled him to swoop swiftly down upon his adversary and seize his prey. Before leaving Lat, he received a report from Senafé to say that five companies of the 25th Native Infantry had left that place on March 16th, for the front, escorting the first reserve ammunition of A-21, B-21, and G-14 Batteries Royal Artillery, as well as thirty mule-loads of hospital stores, and twenty mule-loads of telegraph stores. It was also reported from Antalo that on March 18th, there left that place for the front four Armstrong guns of G-14 Battery Royal Artillery, two 8-inch mortars, K Company of Sappers, the Head-quarters of the 12th Bengal Cavalry, and Brigadier-Generals Schneider and Wilby, to assume command of the First and Second Brigades.

The Head-Quarters Wing of the 3rd Native Infantry having been relieved at Senafé on the 15th of March by five companies of the 25th Native Infantry, was moved forward to Adigrat.

Arrangements made for the event of the early termination of the campaign.

Sir Robert Napier, at this time foreseeing the possibility of an early termination of the campaign, addressed the Governments of the various Presidencies in India, to ascertain what mules were required in India to complete establishments, with a view to the subsequent disposal of the baggage animals of the force.

At the same time embarkation returns were called for, and orders were sent to the plains to provide such followers as had not been hutted, with tents.

CHAPTER XV.

OPERATIONS FROM THE 23RD TO THE 28TH MARCH.

Marawah.

ON March 23rd, Sir Robert Napier advanced from Lat to Marawah, a distance of ten miles and a quarter, with the Head-quarters and five companies of the 33rd Regiment; the Head-quarters and four companies of the Beloochees; A Battery 21st Brigade Royal Artillery, and the Head-quarters and three troops of the Sind Horse.

Sir Charles Staveley, with his force, removed to Lat. Reports were received at Marawah that the G Battery of the 14th Brigade Royal Artillery, two 8-inch mortars, with 41 elephants, a wing of the 12th Bengal Cavalry, and the Engineer Park, had arrived at Atsala on March 20th, from Antalo; a difficulty in obtaining native carriage was also reported, and Captain Moore, Persian and Arabic Interpreter, was sent back to arrange it. Reports were also received from Adigrat that the Head-Quarters and six companies of the 45th Regiment had arrived at that place on the 17th, and pushed forward on the 18th. The Head-quarters and right wing of the 3rd Native Infantry also arrived at Adigrat on the 18th, having made a double march from Guna Guna.

Difficulties of the road.

Notwithstanding the reduction of baggage, the road was so bad between Lat and Marawah that, although the distance was less than nine miles, it was considered fortunate that all the mules of the transport train reached the latter place before dark. From Lat to the top of Duffat Pass, 980 feet above it, was by no means difficult, except in two places, where the road was narrow and steep, and obstructed by rocks and trees. The descent on the southern slope of the Pass, to Assangalla in the Marawah, proved more formidable, the loose stones and a succession of rugged ravines on approaching the spot selected for a camp having tried the animals very much. The road along which the Army slowly toiled and clambered incessantly over mountain after mountain was so narrow that any halt or break-down in the column made every man and animal in its rear pause. Daily it became more apparent how impracticable had been the suggestions of those who had advocated from the outset a dash upon Magdala. To diverge from the path was out of the question, as it ran along the side of steep sandstone hills, with a precipice below, and the densely wooded hill-face rising abruptly above.

Dildi.

On the following day, the Commander-in-Chief moved from Marawah to Dildi, a distance of fifteen and a half miles. It had been anticipated that the nature of the road would prevent rapid progress; therefore, the first start was made at a very early hour, and every quarter of an hour groups of baggage animals were despatched, until the whole were well on their way by nine o'clock. The nature and length of the road far exceeded, however, the worst anticipations. The first few miles were passed without great difficulty, as the Army followed a route orginally constructed by Wagshum Gobaze. Parts of the road were as difficult as that through the Suru Pass before any labour had been expended upon it. It was rugged, devious, and broken, numerous rivulets, tributaries of the Tzellare had to be crossed, and before some of the animals had cleared

half of the distance, the sun was already declining. Thunder had been heard in the surrounding hills during the afternoon, and towards evening a terrific storm broke upon the line of march. Night soon came on, and the rear of the column was surprised by pitchy darkness. It was, however, impossible to halt; the troops were forced to push on, and the last, the Beloochees, reached the camp of Dildi late in the evening. The Commissariat Train did not, however, come in till the following morning. The march was one of great severity for every soldier carried 55 lbs. weight, including his ammunition.

Thunder-storm. All were drenched by the thunderstorm, and had no change of clothes. The tents of many did not arrive till next morning, and, wet and weary, they had to pass the night on the muddy ground.

Halt at Dildi. After the severe march of the preceding day, a halt was made at Dildi, to refresh the troops. Here much information of Theodore's movements, but little on which reliance could be placed, was received by means of spies. Some asserted that he was preparing for the defence of Islamgie; others that he meant to fight on the Bashilo; others that he would make a night attack on the British force as soon as it had reached the Talanta Plateau. Little credit was given to the last assertion; but no precautions were neglected, and the videttes and picquets were doubled. At Dildi, some small supplies of fowls and eggs, which were exceedingly grateful, were obtained from the people of the country, and here a depôt was established.

March to Wandach. After a day's halt at Dildi, the Commander-in-Chief, with the 1st Brigade, to which now the 4th (King's Own) Regiment was attached instead of the 33rd, moved to Wandach, followed at the interval of one march by Sir Charles Staveley with the 2nd Brigade, who was again followed at a similar interval by the 3rd Brigade, with the elephants and heavy artillery. The 4th King's Own Royal Regiment had to perform

Double March by 4th King's Own Royal Regiment. a double march to join the First Brigade, no easy task with the weight the men were then carrying, for as soon as they arrived at Dildi, and before many of the men had rested from their previous march (one of the longest and most harassing of the whole campaign), the regiment started again for Wandach, with their Commandant marching on foot, as he had done from the commencement of the operations, at their head. This regiment, overtaken by a succession of storms when climbing the Wandach Mountain, only succeeded at night in getting their baggage up the steeps, slippery with hail, by the never flagging energy of the men, then half famished, and suffering from wet and cold.

Thunder-storm. At Wandach the force was again exposed to a terrific thunderstorm just as it reached its camping ground, which being ploughed land was quickly converted into a quagmire. When the 4th Regiment arrived at night, there was no dry ground for their tents, and the men had to lie down in their wet clothes on the swampy ground, with the thermometer below freezing point. The distance from Dildi to Wandach was not, however, more than eight miles; and a continuous ascent of 3,000 feet brought the force to the head of the Wandach Pass, 10,910 feet above the sea, whence there was a grand view of the valley of the Takazze, bounded on the south by the hills of Santara. On the following day, the 27th, the advance was continued to Muja, another distance of about seven miles.

March to Muja. On the night the 1st Brigade halted at Muja, the camp was thrown into considerable excitement by the arrival of an officer with a letter from Colonel Phayre, who was reconnoitring with some horsemen a few miles ahead, reporting that M. Münzinger, who had been sent as an envoy to the camp of Wagrhum Gobaze, was missing, and had possibly fallen into the hands of Theodore, while Theodore himself had crossed the Bashilo, and was advancing to defend the passages of the Takazze. This information subsequently was discovered to be without foundation; but Sir Robert Napier was determined that he would next day secure the passage of the Takazze and the steep ascent

beyond it to the Wadela Plateau, in case Theodore might seek to take advantage of the favourable defensive position which the summit of the abrupt southern bank of the Takazze would afford him. On the following morning, accordingly, the force moved down from Muja to the Takazze, a distance of about six and a-half miles, where measures had been taken for the collection of grain to feed the animals, which were here unloaded and permitted to rest. Lieutenant-Colonel Milward, with a small force of Infantry, and a battery of mountain guns, pushed up the opposite bank of the river to secure a footing on the plateau. Strong working parties of the 4th, the Belochees and the Punjabees, were pushed forward, with Captain Goodfellow and Lieutenant Le Mesurier, of the Engineers, to form a practicable path up the steep and precipitous southern bank of the Takazze, which rose abruptly above the river to a height of more than 3,000 feet. After no great length of time the Signallers on the summit signalled that the road was prepared, and the force began to climb the steep ascent. Not without difficulty it crowned the summit, but before dark it did so, and the passage of the Takazze was secure for the whole of the force. That night the Commander-in-Chief halted on the river Santara, four and a-half miles from the Takazze, sending back word to Sir Charles Staveley to push on and join him. The Takazze, in March, was anything but a formidable river; it was, in fact, but a series of pools, yet in the rainy reason it must be a magnificent mass of water, as it is the principal tributary of the Blue Nile, which sweeps down the rich soil of Abyssinia to fertilize the valley of Egypt.

March to the Takazze.

"At this time, 31st March, the latest reports received at the Head-Quarters of the "Force showed the total strength of the Land Transport Corps in Abyssinia to be— "5,322 Camels, 10,309 Mules, 1,460 Ponies, 15 Donkeys, 6,037 Pack bullocks, 534 "Draught bullocks, 273 Mule carts, and 270 Bullock carts. Of these, 6,503 mules "belonged to the Highland Train, of which 500 were sick.

Captain Holland's Report of 1st April. Strength of Land Transport Train.

"In the Lowland Train the sick were—1,856 mules and ponies, 897 Bullocks, and "264 Camels. All sick animals had been ordered to the lowlands in order to obviate "the necessity of carrying up provisions for their attendants.

Sick animals.

"Conventions for the carriage of Commissariat stores in advance of Antalo had been "made with the natives of the country, from Antalo to Atsala, Atsala to Ashangi, Ashangi "to Lat, Lat to Dildi, and Dildi to the Takazze. The convention, however, from Atsala "to Ashangi, broke down on the 20th March, and arrangements were being made for "another convention between those two stations.

Conventions for native carriage.

"The officer sent to Berbera to purchase animals for the Transport Train had succeeded "in obtaining 1,009 bullocks and 15 donkeys. He was continuing to purchase animals of "these descriptions there, but reported that the resources of the place had been much "overrated, that mules and ponies were scarce, and the few he had seen had been of "the worst description. Camels, he stated, could be purchased in large numbers, but "no report of the number obtained had yet been received.

Purchases in Berbera.

"Another officer sent to Hodeida had succeeded in purchasing about 400 powerful "camels, which by this time were landed at Zula. Nearly the whole of the mules of the "Highland Train were employed in moving troops, ammunition, &c., on to the front, and "those of the Lowland Train in conveying Commissariat stores and provisions from Zula "to Adigrat, and the intermediate stations.

Purchases in Hodeida.

"The Commanding Engineer reported that, on the 21st of March, 8 miles and 80 "yards of the railway from Zula to Kumayli had been completed, leaving 3 miles "1,680 yards of the line still to be completed, and that the earthwork had been completed "for the whole distance. The Commissariat were working six trains a-day carrying "provisions, &c., in addition to which other trains conveying railway plant to the Kumayli "end of the line were being run daily.

Railway.

Telegraph. "On the 22nd of March, the telegraph line had been completed to Agula, 35 miles "from Antalo, and Lieutenant St. John, R.E., the officer in charge, expected that it "would reach Antalo by the 31st March. The line had been working fairly lately, "though two more interruptions had occurred between Senafè and Adigrat. The "traffic on the line was about 200 messages per diem.

Photographers. "The photographers had been employed in photographic printing and mounting plans "(executed by the Quartermaster-General's Department) of the route followed by the "Army. These plans were used as distribution maps. All the baggage of the Army "having been left at Lat, the photographic apparatus was left there also, but had been "ordered up.

Signalmen. "The signallers had lately on several occasions proved very useful in communicating "and passing orders between the 1st and 2nd Brigades when one march distant from each "other.

Water supply. "As far as Antalo, works for the water supply had been executed, and extra works had "been carried out at Rahagedi and Suru in addition to those previously mentioned, "owing to the diminution in the supply of the springs originally utilised. Beyond Antalo, "with but few exceptions, the supply of water at the various camping grounds was abundant. "Roads for mules had been made to and from the water, and arrangements for a readier "access and greater facility of drinking made. The demand for water at Rahaguddy and "Suru had been greater than was originally intended, but the supply had proved sufficient "to meet these demands. The quantity of water obtainable in the Kumayli Pass was "less than it was two months previous, excepting at the station of Undul Wells, where the "supply was as full as ever. At the encamping grounds, where the water was liable to "become fouled, owing to the scanty supply, pumps were driven to afford drinking water "to the force, and drawn again the next morning previous to marching.

Trigonometrical survey. "Lieutenant Carter, R.E., the officer in charge of the Trigonometrical Survey, was "at this time carrying on a traverse with theodolite, and making a rough sketch of the "country from Antalo to the front. On the 29th March, he had reached Lat. His "assistants, Lieutenants Dummler and Holdich were working, the former from Antalo "towards Adigrat, and the latter from Adigrat to Antalo, and hoped to complete a "junction by the middle of April."*

* Extracted from the fortnightly Report, furnished to the Horse Guards, by Captain Holland, Assistant Quartermaster-General, dated the 1st April, 1868.

CHAPTER XVI.

OPERATIONS FROM THE 28TH MARCH TO THE 7TH APRIL.

Arrival of 26th Foot.

On the 30th and 31st of March, the 26th Foot (Cameronians), consisting of 29 officers and 816 non-commissioned rank and file arrived at Zula from India, and were at once moved up to Senafè.

Halt at Santara.

On account of the difficulty in regard to native carriage, the 1st Brigade, which arrived at Santara on the 28th of March, halted there for two days. Here Sir Robert Napier received a visit from the uncle of Wagshum Gobaze, who arrived with a body of 400 Cavalry, whose appearance created a very favourable impression in the minds of the Europeans. Wagshum Gobaze himself wrote to Sir Robert Napier, expressing his regret that they could not have a personal interview, as he was necessarily absent in Begemder; but his uncle and emissary, Dejatch Mashesha, stated that he had instructions to render to the British all aid in his power. On the morning of the 30th, the 2nd Brigade, under Sir Charles Staveley, marched into Santara. Here the 3rd Brigade was broken up, and amalgamated with the 1st and 2nd Brigades; and Colonel Field, its Brigadier, reverted to the command of the 10th Native Infantry; Captain A. Durand, the Brigade-Major of this Brigade, also reverted to regimental duty.*

Arrival of Dejatch Mashesha.

Santara.

Santara, where the Commander-in-Chief halted for two days, to concentrate the 1st and 2nd Brigades, is on the edge of the table-land of Wadela, which has an average height of 10,500 feet above the sea level. The climate here and on the plateau was very variable; in the daytime the thermometer stood about 110 degrees in the tents, at night it fell to 19½ degrees, and ice was sometimes formed in a closed tent with twelve occupants. Between the Takazze and the Bashilo, besides the Wadela plateau, lie the two plateaux of Talanta and Daont, north of the Bashilo; and in the fork formed between that river and one of its tributaries, the Kulkulla, is grouped together the knot of mountains of which Magdala is the key. In order to reach this fortress the route of the Army lay across the intervening plateaux of Wadela and Talanta. The formation of both of these is basaltic, and they are consequently intersected by steep and precipitous ravines. In the most important of these, which separates the highland of Wadela from that of Talanta, runs the river Jedda.

Plateaux of Talanta and Daont.

Wadela Plateau.

Apparently the most easy route of approach to the Bashilo from Santara would have been round the upper sources of the Jedda, by a place called Kosso Amba; but from the information collected, including the useful report of Mr. Münzinger†—who had been despatched by Sir Robert Napier to visit Wagshum Gobaze, and had taken the

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* The good services performed by Captain Durand as Staff Officer of the Advanced Brigade, and afterwards as Brigade-Major of the 3rd Brigade, were specially brought to notice by Brigadier-General Field.

† See page 435. Chapter XII.

opportunity to reconnoitre the country—it was ascertained that the ground about Kosso Amba was very rugged and broken, and that the most advantageous line of route would be in a south-westerly direction, along the Wadela plateau, to a place called Bethor, on the edge of the Jedda Ravine, where the road which Theodore had constructed, from Debra Tabor to Magdāla, for the passage of his heavy baggage and big mortars, dipped into the defile of the Jedda. From this point advantage could be taken of Theodore's own road to advance against him. On March 31st, accordingly, the 1st Brigade moved from Santara to Gahso, and on April 1st from Gahso to Abdikum, followed by the 2nd Brigade, which halted on April 1st at Gahso.

Captain Holland's Report of 1st April.

"On April 1st, the whole British force in Abyssinia consisted of 10,800 fighting men, "with 14,500 followers, who were attached to the Land Transport Train, Commissariat "Department, regiments, &c. Its distribution was as follows:—

"The Head-quarters of the force, with the 1st Brigade of the 1st Division, consisting "of the following troops were at Abdikum:—

Strength and Distribution of the Force.

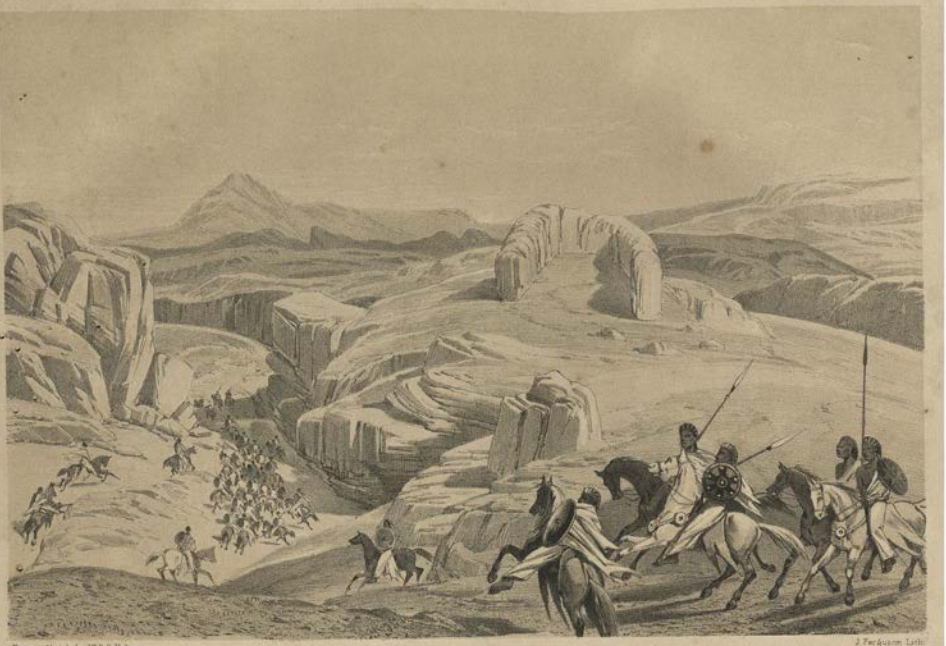
"3rd Regiment Sind Horse	208
"Head-Quarter wing 12th Bengal Cavalry	150
"Naval Brigade Rocket Batteries	83
"A Battery 21st Brigade Royal Artillery (steel 7-pounder "guns)	122
"Head-Quarters 10th Company Royal Engineers	32
"4th King's Own Royal Regiment	530
"23rd Regiment Punjab Pioneers	671
"Head-Quarter wing 27th Native Infantry (Beloochees)	327
	2,123

1st Brigade, 1st Division.

2nd Brigade 1st Division.

"The Head-Quarters of the 1st Division, with the 2nd Brigade, were at Gahso, one "march in rear of the Head-Quarters of the force and of the 1st Brigade. This Brigade "consisted of the following troops:—

"Head-Quarters and four troops 3rd Bombay Light "Cavalry	171	
"G Battery 14th Brigade Royal Artillery (four "12-pounder Armstrong guns)	92	Guns, carriages, &c., carried on elephants.
"Detachment 5th Battery 25th Brigade Royal Artillery, "with two 8-inch mortars	35	
"B Battery 21st Brigade Royal Artillery (steel 7-pounder "guns)	109	
"Head-Quarters and K Company Madras Sappers and "Miners	131	
"Head-Quarters and 2nd, 3rd, and 4th Companies "Bombay Sappers and Miners	294	
"33rd (Duke of Wellington's) Regiment	700	
"Head-Quarter Wing 10th Regiment N. I.	217	
	1,749	



From a Sketch by Mr R.R. Holmes

J. Ferguson Lith.

WADELA PLATEAU

(Abyssinian Horsemen)

Left at the TOPL DEPOT of the WAR OFFICE

COLL SIR W. JAMES, R.E. DIRECTOR

"The following troops were *en route* to join the 1st and 2nd Brigades, 1st Division, "and were on this date at the following stations:— Troops en route to join 1st Division.

"Head-Quarters and six companies 45th Regiment, at "Wundach, two marches in rear of 2nd Brigade ..	385
"Head-Quarter Wing 3rd Regiment N. I. at Dildi ..	300
"One troop 3rd Light Cavalry at Dildi	73
"Wing 27th N. I. Regiment (Belochees) at Marawah	286
"Head-Quarter wing 3rd Dragoon Guards at Makan	220
"Head-Quarter squadron 10th Bengal Cavalry, on the "march from Antalo	140
	1,404

"The 1st Division left all baggage and stores at Lat; this baggage had since been "brought on to Dildi, and the stores at that place were left under the charge of a guard "of 50 dismounted men of the 3rd Regiment of Sind Horse. All troops in advance of "Dildi were marching without baggage, and with a limited supply of bell-tents. A "detachment of 130 men of the 10th Regiment of Native Infantry was at Atsala, "escorting stores to the front; detachments, consisting of one duffedar and 12 men of the "3rd and 12th Cavalry, were at each postal station from Antalo to Lat, and parties of "one duffedar and six men at each station from Lat to the front.

"The troops comprising the 2nd Division of the force, were stationed at Antalo, "Adigrat, and Senafé, and were as follows:— 2nd Division.

"At Antalo, Brigadier-General Collings commanding—	Antalo garrison.
"1 Troop 3rd Bombay Cavalry	73
"1 Company Bombay Sappers and Miners	126
"Wing 3rd Regiment Native Infantry	375
"En route to Antalo—	
"5/25 Battery Royal Artillery, with 6-pounder brass "guns	90
"4 Companies 45th Regiment	280
"3 Companies 25th Regiment Native Infantry ..	190
"At Adigrat—	Adigrat garrison.
"1 Troop 12th Bengal Cavalry	70
"2 12-pounder Armstrong guns of G Battery 14th "Brigade Royal Artillery	60
"Head-Quarters and 5 companies 25th Regiment N. I.	430
"At Senafé—	Senafé garrison.
"1 Troop 10th Bengal Cavalry	73
"No. 1 Company Native Artillery, with Mountain Train	60
"Wing 10th Regiment Native Infantry	337
"3 Companies 21st Punjab Native Infantry	240
"1 Company 21st Bombay Native Infantry (Marine "Battalion)	87

"Detachments of one duffedar and 12 men of the 10th and 12th Bengal Cavalry were "located at each postal station between Senafé and Antalo; and 50 men of the 12th "Bengal Cavalry were at Agula, half-way between Antalo and Adigrat, and small detach- Postal parties.

"ments of Cavalry and Native Infantry were at such stations between Senafè and Antalo "as were considered advisable by the General Officer commanding the Division. The 26th "Regiment (Cameronians) embarked at Vingorla on March 17, and were ordered, on "arrival, to move from Zula, to supplement the garrisons of Senafè and Adigrat.

Zula Brigade.

"The Zula Brigade was under the command of Major-General Russell, and consisted "of the following troops stationed at Zula, and the different stations in the pass between "Zula and Senafè:—

"At Zula, 18th Regiment Bombay Native Infantry ..	680
" „ Kumayli, 2nd Regiment Bombay Native Infantry	702
" „ Suru, 2 companies 21st Punjab Native Infantry ..	160
" „ Undul Wells, Head-Quarters and 2 companies "21st Punjab Native Infantry	160
" „ Rahagedi, 1 company 21st Punjab Native Infantry	80

"The Zula command was to have been strengthened by the 5th and 8th Regiments "of Bombay Native Infantry, but they did not arrive till after the fall of Magdala, and "never disembarked."*

Landing of Naval small-arm brigade.

On the 30th March Commodore Heath landed, at the request of Sir Robert Napier, for the protection of Senafè, a Naval Small Arm Brigade, composed of Captain Colin Campbell, commanding; Lieutenants Maclear, Mostyn, and Fryer; Midshipmen Maitland, Court, and Napier; Captain Fraser, R.M.L.I.; Surgeon Shaw, and Assistant Paymaster Pawsay, with 123 Bluejackets and 60 marine infantry and artillery.

This brigade was not, however, sent up to Senafè on account of the arrival at Zula of the 26th Cameronians, from India.

Difficulties regarding native carriage.

The halt at Santara was not entirely caused by the necessity of concentration of the 1st and 2nd Brigades, but also on account of the delay in arrival of provisions. No flour could be obtained in Wadela, and the army was dependent on its chain of communications and on its carriage. On March 31st, Brigadier-General Merewether was sent back to the Takazze, to arrange some difficulties with the owners of native bullocks employed in the transport of provisions, and the settlement of similar difficulties near Atsala was entrusted to Major Grant and Captain Moore, of the Intelligence Department.

Precautions against night attacks.

All precautions were taken against a night attack by Theodore on the road across Wadela. It was well known that he had many spies, who daily reported to him the British movements, and on the Wadela plateau several horsemen were seen, who could be easily recognised to be scouts, but were too astute to allow themselves to be captured by our Cavalry. The picquets and vedettes were nightly posted by Colonel Fraser, V.C., of the 11th Hussars, who had been appointed Commandant of Outposts, and were frequently and minutely inspected.

Gahso.

Near Gahso an abundance of hornblendic rock was found, which had the appearance of coal, and as fuel was scarce, was eagerly seized upon by the soldiers to cook with. It was quickly discovered, however, upon trial, to be incapable of combustion.

Native carriage.

Conventions with the native proprietors of transport animals were made at Abdikun for the carriage of supplies from the Takazze to Bethor.

The following return, framed by the Quartermaster-General's Department, shows the strength and distribution of the Force on the 1st April:—

* Extracted from Captain Holland's fortnightly Report to the Horse Guards, dated the 1st of April, 1868.

Corps.	Stations.	Number of Troops or Companies at each Station.	At Regimental Head-Quarters, or on detached Duty at Station.					Effective Strength, exclusive of those sent on, left at Home, or in India.									Horses, including Officers' Chargers.
			Field Officers.	Captains.	Subalterns.	Staff.	Native Officers.	Staff Sergeants.	Sergeants.	Trumpeters or Drummers.	Farriers.	Rank and File.			Total Non-Commissioned Officers and Men.		
												Fit for Duty.	Sick in Hospital.	On Command.			
BRITISH CAVALRY.																	
Right Wing 3rd Dragoons	Makan	3	2	5	2	..	..	1	10	3	3	155	5	26	208	234	3
NATIVE CAVALRY.																	
3rd Sind Horse	Suntara	6	2	..	5	2	19	..	39	6	1	177	9	201	433	468	
3rd Light Cavalry	Gubso	..	2	..	2	3	17	2	36	..	1	120	2	253	419	483	
10th Bengal Cavalry	Sonafe	..	2	2	2	2	13	..	34	6	10	175	3	195	441	463	
12th ,,	Gubso	..	1	4	2	3	16	6	40	6	6	62	..	352	461	485	
ROYAL ARTILLERY.																	
G. Battery 14th Brigade	Suntara	1	..	2	4	1	..	3	6	2	1	88	..	53	150	120	
A. ,, 21st ,,	,,	..	..	2	4	1	..	3	6	2	1	73	..	7	92	11	
B. ,, 21st ,,	,,	1	..	1	4	1	..	3	6	2	1	66	..	11	88	15	
6th ,, 28th ,,	Zula ..	1	..	2	4	2	..	2	6	2	..	89	4	39	132	19	
NATIVE ARTILLERY.																	
No. 1 Company Bombay Native Artillery	Sonafe	..	1	..	1	2	..	1	6	3	..	67	..	9	86	2	
NAVAL BRIGADE.																	
Rocket Battery	Tulanta	..	..	..	..	5	2	..	..	4	1	78	15	..	82	10	
ROYAL ENGINEERS.																	
10th Company Royal Engineers	Santara	..	1	..	2	1	..	1	3	1	..	38	1	48	82	3	

Quarter-master-General's Return of strength and distribution of the Force.

Corps.	Stations.	Number of Troops or Companies at each Station.	At Regimental Head-Quarters, or on detached Duty at Station.					Effective Strength, exclusive of those sent or left at Home, or in India.								
			Field Officers.	Captains.	Subalterns.	Staff.	Native Officers.	Staff Serjeants.	Serjeants.	Trumpeters or Drummers.	Farriers.	Rank and File.			Total Non-Com. Officers and Men.	Horses, including Officers' Chargers.
												Fit for Duty.	Sick in Hospital.	On Command.		
SAPPERS AND MINERS.																
1st Company Bombay Sappers and Miners ..	Antalo ..	1	..	..	1	..	2	1	2	2	..	66	8	19	98	1
2nd ditto, and Head-Quarters	Takazze ..	1	..	2	1	1	2	4	4	2	..	93	9	8	120	4
3rd ditto	Gahso ..	1	..	1	..	..	2	2	..	2	..	100	4	11	119	1
4th ditto	" ..	1	..	..	1	..	2	1	2	2	..	98	..	..	103	1
Head-Quarters and K Company Madras Sappers and Miners	Lat	1	1	2	1	1	2	..	9	2	..	106	6	..	123	6
G. and H. Companies ditto	Zulu & Kumayli	2	..	..	7	1	3	..	20	4	..	222	..	..	246	7
BRITISH INFANTRY.																
1st Battalion King's Own Regiment	Sindi ..	10	2	10	18	4	..	6	34	19	..	470	48	99	684	24
26th Foot (on board ship)	Annesley Bay .	10	3	8	14	4	..	7	34	17	..	740	18	..	816	20
32nd "	Santara ..	10	3	9	19	7	..	5	34	17	..	614	13	90	773	21
45th "	Antalo ..	10	3	6	17	5	..	6	36	18	..	659	35	7	761	8
NATIVE INFANTRY.																
2nd Grenadiers	Kumayli ..	8	1	..	2	4	14	3	36	16	..	478	98	43	674	8
3rd Regt. Native Infantry Head-Quarter Wing	Marawah ..	4	2	1	4	1	8	..	17	2	..	263	7	76	365	7
" " " Left Wing	Antalo ..	4	..	1	1	1	5	..	16	12	..	278	..	..	306	2
10th Regt. Native Infantry Head-Quarter Wing	Gahso ..	4	3	..	1	3	8	..	22	12	..	147	2	177	360	9
" " " Left Wing	Senafé ..	4	1	..	1	1	7	..	16	4	..	140	17	143	320	3
18th Regiment Native Infantry	Zula	8	3	1	4	..	15	2	34	15	..	324	42	264	681	8
21st " " detachment..	Senafé ..	1	..	..	1	..	2	..	5	3	..	60	10	..	78	1
21st Punjaub Pioneers..	" ..	8	2	2	..	2	15	..	38	15	1	701	7	..	763	7
23rd Punjaub Infantry..	Abdikum ..	8	1	2	3	3	15	..	37	13	..	450	3	263	706	8
25th Regiment Bombay Native Infantry ..	Adigrat ..	8	2	..	3	4	13	..	36	14	..	425	18	140	633	12
27th " " " ..	Abdikum ..	8	2	1	2	5	15	..	37	16	..	281	91	265	690	8
Total	..	145	39	62	141	67	196	58	685	245	23	7,898	475	2,712	12,096	2,462

The following statement shows the number of troops that had reached or departed from Africa during the month of March:—*

Arrivals at and Departure from Africa of Troops, in March, 1868.

Corps.	Officers.	Native Officers.	Non-Commissioned Officers and Men.	Horses.	Date.	From whence Arrived, and in what Ship.
ARRIVALS.						
						From Bombay.
3rd Dragoon Guards, Right Wing	10	..	201	246	4th March, 1868 ..	"Decision." "Albertine." "Revell."
						From Calcutta.
10th Bengal Lancers	6	13	441	463	6th March, 1868 ..	"Winchester."
					4th March, 1868 ..	"Tynemouth." "Ellen Stuart." "Callerhoe."
						From Vingorla.
26th Cameronians	29	..	816	20	30th March, 1868 ..	"England."
					31st March, 1868 ..	"Queen."
Total	45	13	1,458	729		
DEPARTURES.						
						To Bombay.
10th Bengal Cavalry	..	1	8	..	27th March, 1868 ..	"American."
12th " "	..	..	5	..	" " " ..	"
Madras Sappers	..	..	6	..	8th " " ..	"American" and "Sultan."
2nd Regiment Native Infantry ..	..	..	1	..	" " " ..	"Sultan."
3rd " " ..	..	..	13	..	27th " " ..	"Sultan" and "American."
18th " " ..	..	..	7	..	" " " ..	" "
25th " " ..	..	..	54	..	" " " ..	" "
27th " " ..	..	..	1	..	8th " " ..	"
21st Bombay Native Infantry ..	..	..	8	..	27th " " ..	"American."
21st Punjaub Native Infantry ..	..	..	6	..	" " " ..	"
23rd " " ..	..	..	9	..	8th " " ..	"American" and "Sultan."
Total	..	1	118	..		

* Quartermaster-General's Return.

Strength of each arm of the Force.

The strength of each arm of the Force on the above date was as follows :—*

Description of Force.	Field Officers.	Captains.	Subalterns.	Staff.	Native Officers.	Sergeants and Havildars.	Trumpeters or Drummers.	Farriers.	Rank and File.	Total Non-Com. Officers and Men.	Horses, including Officers' chargers.
British Cavalry ..	2	2	5	2	..	11	3	3	186	209	234
Native Cavalry ..	7	6	10	10	65	177	22	16	1,532	1,747	1,899
Royal Artillery ..	..	7	16	5	..	34	8	3	417	462	165
Native Artillery ..	..	1	2	..	3	7	3	..	76	86	2
Naval Brigade ..	..	..	5	2	..	4	1	..	93	98	10
Royal Engineers ..	1	..	2	1	..	4	1	..	77	82	3
Sappers and Miners ..	1	5	11	3	11	95	14	..	750	809	20
British Infantry ..	11	33	68	20	..	162	71	..	2,801	3,031	73
Native Infantry ..	17	8	22	24	117	299	122	1	5,153	5,577	73
	39	62	141	67	196	•743	245	23	11,385	12,096	2,479

Abdikum. Sindi.

On April 2nd the Commander-in-Chief, with the 1st Brigade, moved his camp from Abdikum, a distance of about two miles, to Sindi, about 30 miles from Santura, and Sir Charles Staveley moved from Gahso to Abdikum, so that the force was concentrated in case of attack. Here there occurred an incident which might have been

Second visit of Mashesha.

attended with serious consequences. Mashesha, the uncle of the Wagshum Gobaze, again paid a visit to Sir Robert Napier with about 200 followers, and when his visit was concluded, he was escorted by an officer beyond the outposts of the 1st Brigade. On his way to a neighbouring village, he used a road which led close past one of the outposts of the 2nd Brigade, where a corporal and four men of the 3rd Bombay Cavalry were stationed. This picquet not being aware that the Abyssinian horsemen had come from the camp of the 1st Brigade, warned them not to approach. The Abyssinians replied with shouts of derision, brandishing their lances. The corporal, presuming that they were a detachment of Theodore's Cavalry, ordered one of his party to fire, and the shot was returned: the remainder of the picquet then fired and advanced against the supposed enemy, who retreated, with the loss of one killed and one wounded. At the sound of the shots the troops stood to their arms, but it was soon discovered that the affair originated in a mistake. M. Münzinger was despatched to the Abyssinian camp, to explain the matter, and offer a pecuniary compensation to the relatives of the killed. The compensation and apology were readily accepted, and any serious complications with the Wagshum averted.

Talanta Plateau.

On April 4th, Sir Robert Napier broke up his camp at Sindi, and moved across the ravine of the Jedda to the Talanta Plateau. The Punjab Pioneers, the A Battery of the 21st Brigade Royal Artillery, and two companies of the 4th (King's Own) Regiment, under the command of Lieut.-Colonel Milward, R.A., had marched from Sindi on the afternoon of the 3rd, to clear the road down to the Jedda River, with orders to move upon Averkut early on the morning of the 4th, and secure the summit of the ascent from

Jedda Defile.

the Jedda Defile. On the morning of the 4th, Colonel Milward ascended from the Jedda, and seized the entrance on to the Talanta Plateau. The Commander-in-Chief, with the 1st Brigade, followed closely to support the advanced guard; while the 2nd Brigade, under Sir Charles Staveley, occupied Bethor, and closed down to the edge of the ravine.

* Quartermaster-General's Return.

At Bethor the British force struck the road constructed by Theodore on his march from Debra Tabor to Magdāla, for the transport of his heavy ordnance, and moved across the Jedda on the track left by the Negus. At Bethor, and across the Talanta Plateau could be constantly seen the vestiges of Abyssinian camps, and the ruins of huts in which the troops of the Emperor had dwelt. He had been at that place on January 1st, the British Army occupied it on April 3rd, but his progress had been slow; it was not until the 28th of January that he reached the banks of the Jedda; on February 5th he reached Avercot, and on March 1st he commenced his descent into the ravine of the Bashilo. On March 14th he crossed that river, on the 18th halted at Arogie, and on the 25th took up his position at Islamgie, where his camp could be seen by the British on the Talanta Plateau on April 5th. Bethor. Theodore's road.

The difficulty of the march between Sindi and Avercot consisted in the descent and ascent of the Jedda Ravine, the bottom of which lay at a depth of 3,000 feet below the table-land of the conterminous plateaux. 18 miles lay between the camps occupied by the Commander-in-Chief on the nights of the 4th and 5th April, of which 11 were within the banks of the Jedda, and nine either sharp descent or ascent. As the army approached the ravine, other traces of Theodore became apparent. The stubble and hay which had before covered the country were burnt, and the ground was covered with ashes; no flocks or herds were to be seen, and scarcely a single human being could be found. In place of farm-houses and villages, there were ruined heaps of blackened stones. The road, which had been constructed by the author of this desolation, was a grand feat of rude engineering; rocks had been hurled aside or blasted through, at an immense expense of labour and of time; the gradient was uniform but very steep, and the broad roadway was covered with loose stones, which had obviously been employed to prevent his heavy ordnance from running too rapidly down the slope. It was not without toil that the march was accomplished; the leading companies did not reach their camp on the Talanta Plateau till after dark, although the march had commenced at five in the morning, and the rear-guard and baggage had for the most part to spend the night upon the road. Most of the Beloochees were 36 hours without food, but uttered no word of complaint. The Jedda was but a succession of stagnant pools, but the marks on the banks proved that in the rainy season it must be a broad, deep, and rapid torrent. Jedda ravine

On April 5th, Sir Charles Staveley, with the 2nd Brigade, closed up to the Commander-in-Chief. For some days the force was delayed on the Talanta Plateau by want of supplies, which were ultimately obtained from the country in a considerable quantity, as the peasantry brought to the British lines grain which had been buried in order to conceal it from the marauders from Theodore's camp. On April 8th, the Head-Quarters and six companies of the 45th Regiment arrived and joined the main body, which on the 9th moved forward five miles across the plain to the brink of the descent into the valley of the Bashilo, where it encamped within sight of the heights of Fahla, Selassie, and Magdāla, around which the army of Theodore could be clearly distinguished. The descent to the river Bashilo, a distance of five miles, lay at the feet of the army, and in a plateau on the descent, the 23rd Regiment Punjab Pioneers and a wing of the Belooch Battalion were stationed, to clear away any obstacles or make any improvements necessitated by the weather in Theodore's road. Junction of 1st and 2nd Brigades on the Talanta Plateau.

The 23rd Regiment Punjab Pioneers had, as shown in Chapter VII, embarked at Calcutta, with camp followers and mules for the use of officers and men, so as to render them perfectly independent, fully equipped, and ready to take the field the moment they landed. They arrived in Annesley Bay on the 4th, 12th, and 15th January, 1868. Before the last detachment arrived, three companies had been sent up country. One company, Services of the Punjab Pioneers.

under Captain Currie, was employed in advance of the Army in road-making, and remained with the Pioneer force during the whole advance. Another company was employed in digging wells, and in other works, at Undul Wells and Enderta; another company, under Lieutenant Paterson, was employed in putting up the telegraph from Kumayli to within three miles of Rahagedi, and again from Senafè to Adigrat, working frequently without the superintendence of any Engineer Officer, or of any one connected with the Telegraph Department. This company was afterwards pushed on from Adigrat to join the Pioneer Force, which it did at Muzno. Another company, under Lieutenant Hotham, followed a few days afterwards, and was employed in digging wells and other works at Kumayli. The Head-Quarters and Left Wing, which remained at Zula, were employed in constructing the railway from the coast towards Kumayli; and on commencing this work, it was found that, owing to the want of augurs, the laying down of rails was delayed; but this difficulty was soon overcome by the skilled artificers belonging to the regimental workshops; iron and steel being furnished them, excellent augurs were soon made, which enabled the works to proceed vigorously. In addition to the work on the railway, several wells were dug by this regiment, and water obtained at depths varying from 43 to 67 feet, at a time when all the drinking-water for the Force at Zula was obtained by condensing, the Engineer Department having given up as useless the attempt to obtain water by sinking wells. These wells was estimated to yield about 30,000 gallons of water a-day.

Employed on railway and digging wells.

Clothing in charge of each man on the advance.

On the 1st March, the Head-Quarter Wing left the railway works and marched for the front, each man only taking a light kit, consisting of greatcoat, cloak, waterproof sheet, waterproof cape, two suits of flannel, two pairs of warm socks, a pair of ammunition boots, a pair of Native shoes, a suit of Native light clothing, a working suit, a suit of summer uniform, a cloth parade coat, a pair of leather gaiters, a pair of puttees (bandages), and a carpet to lie on, the regimental mule train being used to carry 15 days' provisions for the regiment. This regiment was armed with the smooth-bore fusil, "Enfield pattern." The men carried their pioneer tools in leather cases slung across the back. On the march to the front detachments were picked up, and on the 30th March the Head-Quarter Camp was reached, at Santara. The regiment was then posted to the 1st Brigade 1st Division, and continued with the Advanced Brigade up to Magdāla, being frequently employed ahead of the Army in reconnoitring and improving the road.

21st Punjab Infantry.

Strength.

The 21st Punjab Regiment of Infantry was divided into eight companies, three of which were Sikhs, mostly from the Lahore and Amritsur districts in the Punjab, two companies of Pathans from the Peshawur frontier, one company of Dogras from the Kangra district, and two companies of Punjabee Mussulmans, from the Lahore, Amritsur, and Jhelum districts. It embarked at Calcutta, fully equipped, its numbers being completed to 8 subadars, 8 jemadars, 40 havildars, 40 naicks, 16 buglers, and 680 sepoys, with 16 cooks, 1 tindal, 12 bheesties (including 4 puckallies), 2 tinmen, 1 mochi, 1 mistry (Lohar), 1 munshi, 1 mubri, 1 grumthi, 1 Adjutant's writer, 8 sweepers, 3 Native doctors, 1 dresser, 1 ward coolie, 1 goorgah, 2 sweepers, and 86 dhooly bearers.

Mule establishment.

The mule establishment consisted of 1 jemadar, 4 mates, 2 bheesties, 1 farrier, 1 salutri, 2 mochis, 1 blacksmith, and 120 muleteers; 8 horses and 311 mules also accompanied the regiment. The mules had for saddles pads made of leather and well lined with felt; on arrival in Abyssinia 100 Otago saddles were issued to this regiment.

Final demand of captives from Theodore

On April 5th, the Commander-in-Chief despatched by a native messenger, to King Theodore, a formal demand for the immediate and unconditional surrender of the prisoners, couched in these firm but moderate terms: "By command of the Queen of England I am "approaching Magdāla with my army, in order to recover from your hands Envoy "Rassam, Consul Cameron, Dr. Blanc, Lieutenant Prideaux, and the other Europeans

"now in your Majesty's power. I request your Majesty to send them to my camp as "soon as it is sufficiently near to admit of their coming in safety." This message was afterwards ascertained to have reached Theodore, but no answer was returned to it.

Preparations for attack.

While the force was on the Talanta Plateau, scaling-ladders were prepared from the poles of the dhoolies, and sandbags were got ready. The weather was very much broken; rain and thunder were of nightly occurrence, and once or twice heavy hailstorms swept across the plain.

Arrangements to cut off Theodore's retreat.

Sir Robert Napier now made arrangements to cut off Theodore's retreat from Magdāla, in case he might attempt to fly and carry off with him the principal prisoners. Dejach Masheshah was requested to occupy the Amba Kuahit, and cut off any retreat eastwards on the Bashilo. An envoy was sent to Masteeat, Queen of the Gallas, to induce her people to close any avenues from Magdāla towards the south. This delicate mission was confided to Meer Akbar Ali, a Mohammedan gentleman attached to the Intelligence Department, who gained the confidence of the Gallas through the profession of a similar creed. The report of Meer Akbar Ali of his proceedings when with the Gallas will be found at page 51, Chapter XIX.

Meer Akbar Ali's mission to the Gallas.

Description of country south of the Bashilo.

On the farther side of the Bashilo from that in which the British force was now encamped lay a rugged mass of broken ground, in the centre of which the heights of Selassie and Fahla rose to an almost equal height with the plateau of Talanta. Magdāla was from this position concealed by Fahla and Selassie. The rugged country, studded with a bushy vegetation, was bounded in the distance by the tablelands of Tanta and of Ambala Sieda. From the former the mountain mass of Magdāla was separated by the ravine of the Minjara, from the latter by the Kulkulla Torrent. Both of these were tributaries of the Bashilo. The mountain mass of Magdāla forms a crescent, of which Magdāla forms the eastern plateau, Fahla the western; midway between the two, in the centre, rises the peak of Selassie, so called from a church upon it dedicated to the Trinity. Magdāla and Selassie are connected by the saddle of Islamgie, and Selassie and Fahla by the saddle of Fahla. The highest of these plateaux is Magdāla, which rises to a height of 9,150 feet above the sea, Selassie is 9,100 feet above the sea, and about 3,000 feet above the ravines of Minjara and Kulkulla. The sides of Magdāla are scarped and steep, but at two points they fall upon the terraces of Islamgie and Sangallat. It is at these two points alone that an entrance can be made to the Amba by the Kokit-ber and Kaffir-ber gates. From the foot of the Fahla saddle, the Arogie Valley runs down to the Bashilo, up which Theodore had constructed the road by which he had dragged his guns into position at Fahla. Between the upper portion of the stream, which forms this valley and one of its tributaries, lies the Arogie Plateau.

Fahla.

Selassie.

Arogie Valley.

CHAPTER XVII.

OPERATIONS FROM THE 7TH TO THE 11TH APRIL (ACTION OF AROGIE).

Recon-noissance.

SIR ROBERT NAPIER, on April 7, descended into the bed of the Bashilo, and reconnoitred the crossing of the river, a muddy stream about girth-deep. Magdāla lay ten miles beyond the Bashilo: hence, it was necessary, in order to make a closer reconnoissance of the fortress, to advance the force to a position whence Staff Officers could, without inflicting serious toil upon their escorts, reconnoitre the approaches of Fahla and of the other outworks of the enemy's position. On April 10, at day-break, the advance was commenced, and the whole of the troops, with the exception

Approaches to Magdāla.

of some Cavalry, were moved down to the Bashilo. The ordinary approach to Magdāla from the Bashilo is by the Arogie Ravine, up which Theodore had constructed his road; the road, on issuing from this ravine, scales the side of Fahla, a gigantic natural bastion level at the top, and is continually exposed to fire from the summits of Fahla and Selassie, and to the descent of rocks and stones. The Arogie Valley is bounded on either side by high serrated spurs, which are drawn from Fahla and Selassie to the Bashilo. The vast natural features of the country rendered it impossible for Sir Robert Napier, with his small force of Infantry, to occupy both sides of the ravine. He recognised that Fahlā was the key of Theodore's position, and determined to occupy the spur leading towards that important outwork, which bears in different parts the names of Gombagie and Affijo. When once established on this ridge, he could operate on either side of Fahla, as might seem expedient after a closer examination.

Water Brigade organized.

As the only supply of water between the Bashilo and Magdāla was under the enemy's fire, all the water-carriers of the force were organised, under command of Captain Bainbridge, for the purpose of carrying forward regular supplies of water from the river. The bandsmen and a party of the Punjab muleteers were also organised, under the command of Captain Griffith, and were furnished with stretchers for the removal of wounded men from the field.

Arrange-ments for attack.

The arrangements for the attack were detailed in the following General Order, dated the 8th April:—

Clothing.

"1. British Infantry regiments, on the day of advance on Magdāla, will wear khakee "clothing.

"2. Each man's great coat, blanket, waterproof sheet, and serge clothing will be "made up into a roll and packed in sulleetahs in the proportion of twelve bundles to one "mule. Requisitions for sulleetahs must be made out on the day previous to the advance, "and they must be packed ready, and piled in separate heaps by regiments on spots which "will be pointed out by the Deputy-Assistant Quartermaster-General of the Brigade.

Rations.

"3. Two pounds of biscuit and two pounds of cooked meat will be carried by each "British officer and non-commissioned rank and file on the morning of the advance. "Native soldiers will be served out with parched grain, or cooked meat and chupatties.

"4. Regimental cooks will remain at the depôt in rear, and if the operations against Fahla and Islamgie last more than one day, they will, day by day, cook the requisite number of rations for their respective corps, which will be forwarded under Land Transport Corps arrangement to the front. Regimental Cooks.

"5. Every foot soldier will cross the Bashilo River barefooted. They must be directed to fill their water canteens at the river before advancing, and warned of the necessity of husbanding it during the early part of the day.

"6. A proper proportion of water-carriers will accompany each brigade in rear of the column; two-thirds at least of the hand bhistees should follow the attacking force. The officer in charge of this corps will see that each regiment and battery are duly supplied with drinking water during the attack, whenever an opportunity offers itself. Water-carriers.

"7. The reserve ammunition of regiments will be placed in charge of a Captain of the Land Transport Corps; 40 rounds per man will follow in rear of the attacking force, under charge of Quartermasters of regiments. The remainder will be divided into two parts, one-half will be in rear of the supporting column, and the other half with the reserve. When a Commanding Officer finds his ammunition running short he will send an officer to the rear with a written order for as many boxes as he requires. Directly ammunition is sent to the front from the supports, it must be replaced as soon as possible from the reserve. Reserve ammunition.

"8. Every Staff Officer and officer in independent command, will provide himself with a certain number of slips of paper of convenient size, as also a lead pencil. All orders conveyed to Staff Officers by word of mouth must be written down by them and read to the officer sending them before being despatched. All written orders received by officers in independent command must be acknowledged shortly in writing, and sent back by the Staff Officer who brought them. Instructions to Staff Officers.

"9. Orders conveyed to batteries of Artillery should invariably be sent through the Officers Commanding the two Artillery divisions, so as to ensure their not being misunderstood.

"10. No one belonging to the attacking force must be allowed to fall out for the purpose of assisting a wounded man. A Hospital Corps, consisting of bandsmen and spare drummers of regiments, and a proportion of Punjab muleteers, will be formed under command of a Captain: they will have in charge all the stretchers and 'dandy' cots, being told off in the proportion of four to each. Hospital corps.

"The men of this corps will march in rear of the attacking force, and will convey wounded men to a spot in rear which will be pointed out to them by the Inspector-General.

"11. Every effort must be made to prevent soldiers wasting their ammunition. The necessity of taking a cool and steady aim should be explained to them on parade, and, when in action, officers and non-commissioned officers must exert themselves to ensure their doing so. Orders to prevent waste of ammunition.

"12. Mounted officers will be allowed one spare charger, which will remain in rear of the supporting column; horses in excess of this number will be with the reserve.

"13. Directly the force is in possession of Fahla and Islamgie, tents will be brought up from the rear by the elephants."

Instructions for troops.

On the 9th of April, the following orders were issued from the Head-Quarter camp on the north bank of the Bashilo:—

"The 1st Brigade 1st Division, with the exception of Cavalry, under command of

"Brigadier-General Schneider, will take possession of the Gombagee Spur, and encamp "there to-morrow.

"The Naval Brigade, A 21 R. A., and 4th Foot, will march at daylight to-morrow "morning to the bottom of the pass. One European officer, one Native officer, and 25 "sabres of the 3rd Light Cavalry will accompany these.

"The four companies of the Sappers and Miners will accompany the 1st Brigade, and "make a road leading from the bed of the Bashilo on to the Gombagee Spur, under the "directions of Captain Goodfellow, R.E.

"The Infantry of the Brigade now at the bottom of the pass will proceed to take "possession of the spur in question, when joined by Major-General Sir Charles Staveley "and Colonel Phayre.

"The A-21 Royal Artillery and Naval Brigade, with an escort of two companies "of Infantry, will remain on the right bank of the Bashilo until the road is reported prac- "ticable for laden mules by Captain Goodfellow, R.E.

Reconnoissances ordered.

"Colonel Phayre, Deputy Quartermaster-General, will accompany the 1st Brigade, "and will make a reconnoissance towards Arrogie and Fahla.

"Brigadier-General Schneider will cover the reconnoissance with such body of "Infantry as he may consider necessary.

"The 2nd Brigade will march to-morrow to the bed of the Bashilo at 10 A.M.

"Captain Bainbridge will make arrangements for supplying the 1st Brigade with a "proper supply of water.

"The Head-Quarter Camp will be pitched with the 2nd Brigade (north of the Bashilo).

"The rest of the Cavalry of both Brigades will remain at this Camp till further "orders.

Cavalry placed on the Bashilo.

2nd Brigade in support.

All preparations having been completed, the 3rd Bombay Light Cavalry, the 3rd Regiment of Sind Horse, and the 12th Bengal Cavalry, were placed to hold the Bashilo, but were kept in readiness to advance, and the remainder of the force was moved across the river under the immediate command of Sir Charles Staveley. The 2nd Brigade, under Brigadier-General Wilby, was ordered to remain in the bed of the Bashilo in support; while the Infantry of the 1st Brigade, under Brigadier-General Schneider, was to occupy the Gombagee Spur, advance to a position suitable for an encampment, and at the same time cover a reconnoissance to be made by the Deputy Quartermaster-General in the direction of Fahla. The guns, rocket battery, and baggage of the 1st Brigade were not to take the road up the Gombagee Spur, which was almost too severe for laden animals, until a road had been prepared by the Sappers and Miners, and had been reported practicable by Captain Goodfellow, the senior engineer officer. It is obvious that artillery and baggage could not have issued from the Arogie Ravine, unless the head of the defile was securely held, without exposure to an attack from Fahla under every disadvantage. The 1st Brigade now consisted of—

Strength of the 1st Brigade on the 10th April.

A Battery 21st Brigade Royal Artillery ..	..	94	Officers and Rank and File.
Royal Naval Brigade	..	87	" "
10th Company Royal Engineers	..	21	" "
1st Battalion 4th (King's Own) Regiment	..	473	" "
23rd Punjab Pioneers	..	600	" "
Wing 27th Beloochees	..	260	" "
K Company Madras Sappers	..	77	" "
3 Companies Bombay Sappers and Miners	..	288	" "

A small detachment of the 3rd Bombay Light Cavalry marched with the 1st Brigade as a support.

Reconnoissance.

Colonel Phayre, supported by Brigadier-General Schneider, started on his reconnoissance. The troops toiled painfully and slowly up the rugged slopes of the Gombagee Spur: they suffered severely from the difficult nature of the path, great heat, and want of water, and many fell out of the ranks exhausted by fatigue. Colonel Phayre arriving at the Affijo Plateau, despatched a report stating, that the head of the defile leading up the Arogie Valley was secured. This report was read by Sir Charles Staveley, and forwarded to the Commander-in-Chief, who received it while still in the Bashilo. Sir Robert Napier, on receipt of this report, ordered the guns of the A Battery, the Naval Rocket Brigade, and the baggage of the 1st Brigade, to move up by the King's Road, the issue of which he understood that Colonel Phayre had secured. He then started for the front, and on his way passed the weary and straggling soldiers of the Infantry of the 1st Brigade.

Affijo Plateau.

Sir Robert Napier arrived on the Affijo Plateau at the same time as the head of the column, which was formed by the 23rd Punjab Pioneers. He then perceived that at the point where the King's Road emerged from the Arogie Ravine, at a distance of 1,200 yards from him, and 700 feet below him, there were no troops stationed, and none nearer to it than the Punjab Pioneers on the Affijo Plateau. Immediately he ordered Major Chamberlain quickly to move his Pioneers to the left, and secure the head of the pass, and sent back speedy messengers to hurry up the whole Brigade. He was none too soon, for the leading mules of batteries were already emerging from the pass. A few moments after they came in view, a puff of white smoke curled up from the summit of Fahla, a round shot whirred over the heads of the Staff and buried itself heavily in the ground behind, the report of a heavy piece of ordnance woke the echoes of the basaltic cliffs of Magdála, and, as if by a preconcerted signal, the steep path and the mountain sides of Fahla were instantaneously covered by masses of warriors, quickly rushing down to seize, as they hoped, wealthy booty from an unsuspecting foe.

Action of Arogie.

Advance of Abyssinian Forces.

For Theodore had watched the appearance of the laden mules, and, imagining that they only bore baggage, had told his soldiery to go down and seize them. They were led by his favourite general, and rushed down to battle as men accustomed to victory. He himself remained on Fahla, to direct the fire of his artillery, which maintained a constant cannonade against the heads of the British columns; but, owing to its elevated position, its fire was plungeing, and, from the use of too heavy charges of powder, it ranged too far, so that it caused no casualties. Among the assailant Abyssinians, who numbered between 6,000 and 7,000, there were no regular Cavalry, but the chiefs, about 500 in number, were mounted, and gorgeously attired in scarlet.

Action of Naval Brigade.

The Naval Brigade hastened up the road to the Affijo Plateau, and as each rocket-tube came into position, it opened on the advancing masses of the enemy, who were startled, and slightly checked; but one portion advanced, nevertheless, with great confidence against the head of the British column on the plateau, while another bore down towards the head of the pass to attack the artillery and baggage.

Advance of British Troops.

Sir Robert Napier ordered Sir Charles Staveley to prepare to receive the enemy; the latter directed Brigadier-General Schneider to cause his men to lay down their packs and advance. The 4th (King's Own) Regiment, in skirmishing order, under Lieutenant-Colonel Cameron, closely followed and, supported by the wing of the Beloochees under Major Beville, the detachment of Royal Engineers under Major Pritchard, and the Bombay Sappers under Captain MacDonnell, descended rapidly the steep path which led down from the Affijo Plateau into the dip of the ground which separated it from the

Description of the Action.

Arogie Plain. The troops cheered loudly, as they saw at last the chance of a close contest with the enemy whom they had for so long been approaching. As the men of the 4th Regiment emerged from this dip and rose upon the brow of the Arogie Plain, extending as they pushed forward, they came close upon the advancing masses of Abyssinians. They opened fire immediately, and the bullets, discharged in rapid succession from their breech-loading arms, told with fearful effect upon their assailants. The latter were driven back, but slowly and stubbornly; they fired constantly, and made several attempts to rally and charge; but the line of skirmishers bore steadily forward, and the main portion of the Abyssinians, after the loss of many chiefs, was driven off the plain of Arogie down the slopes which led into the ravines at the entrance of the defile. A portion retired up the side of the Fahla Hill, and, taking cover in a thick grove of cactus trees, opened a teasing fire on Sir Charles Staveley's right, which caused him some loss.

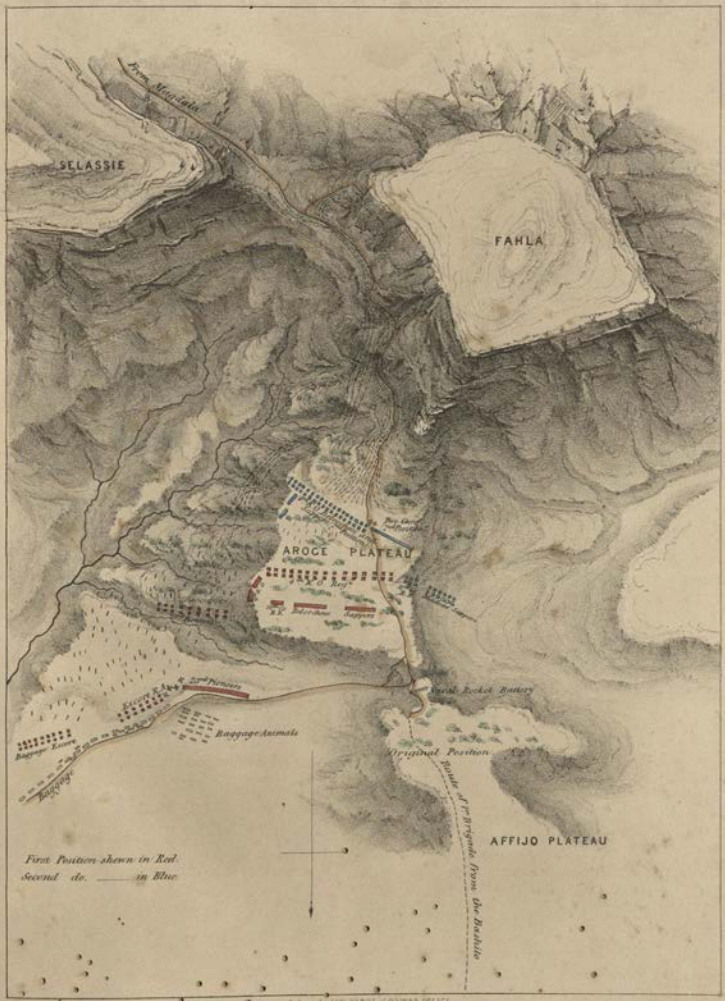
Another party of the enemy attempted to pass round the sides of the Affijo Plateau, and to turn Sir Charles Staveley's right; but were checked by the discharge of a few rockets, and by the exertions of the K Company of Madras Sappers under Major Prendergast, supported by Lieutenant-Colonel Loch with his detachment of Bombay Cavalry. Commander Fellowes of the Naval Brigade, maintained the fire of his rockets until it was masked by the advance of the Infantry. He was then moved forward to join Sir Charles Staveley; and the fire of the rockets, together with some volleys from the Beloochees and Engineers, supported by two of the steel guns, which were brought up to the right flank under Lieutenant Taylor, cleared Sir Charles Staveley's right from all further annoyance. The fire of the rockets was then directed upon the summit of Fahla; they were well aimed, and, as was subsequently ascertained, one fell near Theodore, who was there engaged in directing the operations of his artillery, now reduced at that point to six guns, as his monster piece of ordnance "Theodorus," burst at its first discharge.

In the mean time a sharp action had been fought at the point where the King's Road issued from the Arogie Valley. Lieutenant-Colonel Milward had ascended from that defile with the A battery, escorted by detachments of the 4th (King's Own) Regiment, and of the 23rd Pioneers. On seeing the troops of Theodore rushing down the mountain-side, Lieutenant-Colonel Milward hastily threw his force into position beside the Punjab Pioneers, and opened fire with the A battery. A large body of Abyssinians bore down upon the position occupied by the steel guns and the Punjab Pioneers. Notwithstanding the effects of the mountain artillery, they continued to advance with much determination and order. Major Chamberlain, with his Pioneers, advanced promptly to meet them; both sides rushed in fearlessly, and a close contest ensued between spears and bayonets; for the men of the Punjab Pioneers did not possess breech-loading arms, and could not load so rapidly as the European soldiers. Not without a gallant resistance, in which many spear wounds were received, were the Abyssinians forced off, and borne with great slaughter into the ravines on our left front.

Defence of baggage.

Further on the left, considerable numbers of the enemy pressed towards the head of the defile, where the baggage had arrived. With great readiness the Baggage-Master, Lieutenant Sweny, of the King's Own Regiment, massed the baggage in a safe position; and the baggage-guard, consisting of two companies of the King's Own Regiment and one of the 10th Native Infantry, were brought forward, and effectually checked the attempt of the enemy to penetrate into the defile. Arrested at the head of the ravine by the baggage guard, closed in upon by the Punjab Pioneers and two companies of the 4th Regiment, which Sir Charles Staveley wheeled up against their flank, this portion

ACTION of AROGE



of the enemy suffered most severely. Large numbers fell from the fire of the guns and the rapid discharges of the Snider rifles.

It was four o'clock in the afternoon when the first gun which announced the opening of the engagement was fired from Fahla; it was seven o'clock, and nearly dark, before the Abyssinian soldiery were completely driven off. A thunderstorm and heavy rain had continued during the greater part of the action. When finally repelled, the troops of Theodore spread in no hasty or disorganised flight; they returned again and again to the attack, wherever the ground favoured them. They had advanced with the full confidence of men accustomed to victory, and had cast away all the advantages of their defensive position to close more rapidly with their enemy. They had been promised by Theodore that they should be enriched by the spoils of the English, and it was not without a stout resistance that the last of them were finally driven off the field. *Orders* were then issued by Sir Robert Napier, to prevent the pursuit being carried too far up the hill, as such a movement which could only have terminated by the British being obliged to retire, and thus have inspired some confidence in the now prostrated army of Theodore.

Thunderstorm.

Retreat of Abyssinian Force.

The British troops, thoroughly wet and tired, but elated with their victory, bivouacked for the night on the ground which covered the issue of the Arogie Valley, in order to protect the baggage, which was still in the ravine. During the night, the 2nd Brigade marched up the valley from the Bashilo, and before daylight occupied this position; while the 1st Brigade, on being relieved, reoccupied the commanding position on Affijo, from which it had descended to encounter the enemy.

Bivouac of 1st Brigade.

Arrival of 2nd Brigade.

The wounded were promptly attended to after the action, and many wounded Abyssinians were also carried off the field by the British troops, and carefully tended in the British hospitals. The number of Abyssinian casualties was computed at 700 killed and 1,200 wounded, including many chiefs of note—among whom was the Fit-aurari Gabri, to whom Theodore had entrusted the conduct of the army in the battle, and who was considered as the right hand of the King himself. Nearly all night the calls of the Abyssinians to their wounded friends were heard, and the greater number of the latter were carried off the field. All night lights could be seen burning up and down the steep ascent of Fahla, which at first was supposed to betoken a night attack by Theodore on the British lines, but they were borne by the friends and relatives of those who came to seek some one either killed or wounded on the Arogie Plain.

Wounded.

The British loss amounted only to 20 wounded, two mortally. The great disparity of loss was due to the determined and persistent attack of the Abyssinians against the better disciplined and better armed force of the British, and to the invincible courage with which the Punjab Pioneers, whose smooth-bore musket was hardly equal to the double-barrelled percussion gun of the Abyssinians, repaired the deficiencies of that weapon by a stern use of the bayonet.

Loss of British Force.

Theodore had watched the fight from Fahla, where he superintended his artillery, which was fired by Abyssinians; but Messrs. Saalmüller, Waldmeier, and the other artizans, were required to weigh out the charge for each gun. When the British fire opened upon Fahla, the rockets ranged to the place where Theodore was standing, and one killed a horse close behind him. He exclaimed, "What a terrible weapon!—who can fight "against it?" Then he covered himself with his shield, and watched the battle in silence. At one time those around the King seeing the British skirmishers take ground to the rear, raised a shout of triumph, and sent off news of victory to Magdāla. But as night came on the King sent a messenger to Fit-aurari Gabri to ask what was the news. The messenger returned to say that that chief could not be found. He was sent

Theodore on Fahla.

back for more accurate intelligence, and afterwards returned with the report that Gabri was killed. He named one after the other of his chiefs, and the answer was always that they were dead. The men who had escaped from the battle had gone to their homes in Islamgie. Theodore saw that his army was broken and destroyed. On Selassie, sleepless and in bitter thought, he passed the night, the stillness of which was perpetually broken by loud peals of thunder, and the shrill, though distant, cries of those who sought for the wounded or mourned the dead, down below at Arogie.

Description of the Battle Field after the action.

"Next morning the valley of Arogie showed all the naked horrors of a battle-field. "Tracks of blood marked the courses of the wounded, who had spent their last efforts in "feeble attempts to crawl back to the fortress and live, or to gain the shelter of some "neighbouring bush to die. The body of Fit-aurari Gabri could be distinguished from "the remainder of the fallen by its gorgeous attire. The splendid shirt, which had been "the oriflamme of the Abyssinian forces the previous evening, and which had made the "wearer supposed to be Theodore himself, and to be the mark of many a bullet, could be "recognised by all. He had been one of the first to fall; and seven chiefs who had "attempted to bear away his body, were laid in a heap around him.

"On the left, where the Pioneers and baggage-guard had been engaged, the dead "lay thickest. Along the ravine where the bayonet-charge was made, men and horses "were heaped in tens and twenties. In some cases the sword and bayonet had completed "what the bullet had left but half done; all that lay there had been dead a long time "before morning. On the right, where the firing had been at longer ranges, the tale of "dead was not so great, and more wounded men lay around, awaiting without a murmur or "repine the approaching termination of their sufferings. The claims of these to sympathy "were not disregarded. Many a dying man was turned to ease his pain, and many a flask "was emptied of its precious contents at the dumb request of some fevered lip or "parched tongue. In addition to those that lay there, hundreds had been carried into "the fortress during the night. The rockets and shells left abundant testimony that "the consternation and dismay which they had caused among the Abyssinians were far "from groundless. Many a charred mass and mangled heap showed how terrible was the "havoc, how awful the death they carried wherever they sped. Before a week elapsed, "the sleek wolves and greedy vultures deprived the field of much of its horror, giving it "the appearance which it long will retain—a place of skulls."*

* Shepherd's Abyssinian Campaign.

CHAPTER XVIII.

OPERATIONS ON THE 11TH AND 12TH APRIL (SURRENDER OF THE CAPTIVES).

ABOUT midnight, Theodore, after brooding over the disasters of the day sent Messrs. Flad and Waldmeier to Mr. Rassam's house, at Magdála, with the following message:— "I thought that the people that are now coming were women; I now find that they are "men. I have been conquered by the advance-guard alone. All my gunners are dead; "reconcile me with your people." Theodore after the action at Arogie.

Returning to the King's tent, Messrs. Flad and Waldmeier informed him of their arrival by one of the eunuchs who had accompanied them for that purpose. In the mean time Theodore had been drinking hard: he came out of his tent very excited, and asked the Europeans, "What do you want?" They told him that, as he had commanded them, they had spoken on his behalf to Mr. Rassam, who had proposed to send Lieutenant Prideaux as an envoy into the British camp. Theodore interrupted them, and in an angry voice exclaimed, "Mind your own business—go to your tents!" The two Europeans stood still, in the hope that he might change his mind; but, seeing that that they did not depart, he became angry, and, in a high tone of voice, ordered them to retire at once.

At about four o'clock in the morning, a messenger was sent by Theodore to call Messrs. Flad and Waldmeier again before him. As soon as they arrived he said, "Do "you hear this wailing? There is not a soldier who has not lost a friend or a brother! "What will it be when the whole army comes? What shall I do? Counsel me." Mr. Waldmeier told him, "Your Majesty, peace is best." "And you, Flad, what do you say?" "Your Majesty," replied Mr. Flad, "ought to accept Mr. Rassam's pro- "posal." The King remained a few minutes silent, apparently in deep thought, and then said, "Well, go back to Magdála, and tell Mr. Rassam that I trust in his friendship "to reconcile me with his people. I will do what he thinks best." At daybreak, accordingly, Lieutenant Prideaux, with Mr. Flad and Dejach Alami, a son-in-law and confidential chief of Theodore, started for the British lines. Messrs. Prideaux and Flad sent to the British camp.

By dawn the 1st and 2nd British Brigades had taken up their positions on the Affijo Plateau and the Arogie Plain. The Beloochees were being pushed forward slowly in skirmishing order, so as to cover the force, when a small body of horsemen could be descried slowly winding down the road from Magdála towards the camp. A white flag of truce could be made out, and the uniform of a British officer among them. The news burst through the ranks like wildfire, and, amidst loud cheers and rapturous greetings, Lieutenant Prideaux and Mr. Flad passed through the outposts, and were escorted by a jubilant crowd to the tent of the Commander-in-Chief, where they delivered a verbal message from Theodore, to the effect that till yesterday he had thought himself the greatest man in the world, but that he had now found out that there were others stronger Position of 1st and 2nd Brigades on the 11th April. Theodore's message.

than he, and he desired to be reconciled to the British Government. But reconciliation on any terms short of submission was not in the power of Sir Robert Napier to grant. The Commander-in-Chief had his orders from the Home Cabinet to remove Theodore from Abyssinia, and, confident in his intention of fulfilling these instructions, he had received aid and supplies from the various peoples of Abyssinia, who would have suffered wofully after the departure of the British if Theodore had been allowed to retain his mountain stronghold, or any vestige of his formidable power. The answer which Sir Robert Napier returned to the verbal message of the King was as follows:—

Sir Robert Napier's reply to Theodore.

Your Majesty has fought like a brave man, and has been overcome by the superior power of the British army.

It is my desire that no more blood may be shed. If, therefore, your Majesty will submit to the Queen of England, and bring all the Europeans now in your Majesty's hands, and deliver them safely this day in the British camp, I guarantee honorable treatment for yourself and for all the members of your Majesty's family.

In the meantime Dejach Alami was shown the mortars and the elephants before his return, and was told that the arms used in the action of the previous evening, in which he had been present, were but mere playthings in comparison to these destructive machines; and he was assured by Sir Robert Napier, that if the King did not surrender and give up the captives, the big mortars and the Armstrong guns would be sent up against him, and that then none of his soldiers would escape alive.

Movements of G Battery 14th Brigade, Royal Artillery, with the Armstrong guns.

The movement of the Armstrong guns with the G Battery 14th Brigade, Royal Artillery, as far as Lat, has been described at page 13. On the 28th of March the battery arrived at, and on the 30th it left Dildi at 7 A.M., and arrived at Muja at 8·30 P.M. The road was over high and steep hills on this march. The Quartermaster-Serjeant of the Battery, with his horse, rolled off the road, broke a rib, and had to be sent back. On the 31st the battery marched to Santara; the elephants were much fatigued on this steep march; they were greatly relieved it was found when going up hill, by shifting the breast of the carriage over the front part of the cradle. The battery moved on April 1st to Gahso on wheels, the elephants carrying the guns; on the 2nd, to Abdikum; on the 4th, to Bet Hor, guns on carriages; on the 5th to the bed of the Jedda River, guns on the elephants. The descent here, as already described, was very steep, the wheel horses only were in the carriages, the gunners, assisted by a party of the 33rd, holding on in rear with drag-ropes. When within 150 yards of the bottom of the ghaut, the descent became so precipitous that the horses had to be taken out and gunners put in the shafts, and the carriages lowered with drag-ropes. The men at the ropes were several times on the ground, from the sudden jar of the carriages dropping down a mass of rock, but never let go their hold. The gunners in the shafts were constantly off their feet. The battery left at 3.30 P.M., arrived at midnight, and on the 6th, ascended to the top of the Talanta Plain, another steep march. Everything was of course carried on the elephants, which were terribly fatigued in getting up the first half of the ghaut. About 5 in the afternoon they had got to the level ground, when down came a furious storm of rain and hail. The elephants would not move an inch, and had to wait until it was over. They had got half way up the second part when down came the rain again, and there was nothing for it but to stop again. Two elephants threw their loads—a somewhat common occurrence now on a march. Fortunately it was a moonlight night, and as soon as the rain had ceased the loads were put on and a fresh start made. The rain had made the road so slippery that it was impossible, on the steep parts, for a man to walk without catching hold of the bank at the edge. The

Storm on Talanta Plain.

elephants, however, managed to get along slowly, and about four in the morning all but eleven had got to the top. The leader was just going to step on to the comparatively level ground, when her feet slipped, and away she went, sliding down the road some 50 or 60 yards, to the great danger of the men and elephants in rear. Fortunately she managed to stop herself without going over the side. Her load was taken off, and an effort was made to get her on her legs, but she would not move. The others were so frightened at seeing this slip, that they would not move either, so the load was taken off the leading elephant, and the men carried it to where the ground was pretty level, hoping to induce the animal to show the way to the others; but he would not pass the place where the first one had slipped. The same experiment was tried with another, with a like result; and finding it no use to try any more, they were all unladen, and had to wait for the sun to dry the road a little. In the morning, fresh elephants came out from the camp, and the battery arrived there at last about mid-day, the gunners having been out since 8 o'clock the previous morning.

On the 10th, the battery marched to the bed of the Bashilo River, another steep descent. On this occasion they kept the guns on the carriages, which steadied them much going down steep places, with the wheel horses only hooked in, the gunners as before, assisted by the men of the 45th Regiment, holding on in rear with drag-ropes. The battery left the edge of the plateau at 10 A.M., crossed the river and halted on the opposite side at 2 in the afternoon.

On the 11th they marched at midnight with guns on the carriages for 4 miles up the pass, when they had to shift for elephant carriage. They arrived at the Camp at 8 o'clock A.M., where they put the carriages together, and came into action. At 10 A.M. they received orders to march to the higher Camp; they took the battery to pieces, loaded the elephants, marched off, and brought the guns into action on the right flank of the 1st Brigade Camp.

Armstrong guns shown to Dejach Alami.

Shortly after this it was that these Armstrong guns, brought up with so much labour, were shown to Dejach Alami, who may well have wondered how they could have been brought over such a road. On taking leave to return, the Dejach said to Mr. Flad: "There is no escape for us (meaning the King and his followers); we must surrender, "or we shall all be killed. We have no chance to escape; they would pursue us, and "we are surrounded by our enemies, the plundered Woro Häimano people and the "Wollo Gallas. I am almost sure that the King will send down the captives, but I fear "he won't go down himself, partly from fear, and partly from being mortified."*

It must have been trying for Lieutenant Prideaux and Mr. Flad, after having once set their feet within the British lines, to be required to return to the presence and into the power of such a capricious and cruel despot as Theodore. Equally was it trying to Sir Robert Napier, on whose slightest action or word hung the lives of so many prisoners, still within Theodore's power, to insist upon terms which it must have been evident the still proud, though defeated, monarch by no means contemplated.

Return of Messrs. Prideaux and Flad to Magdala.

The envoys, who were instructed to say that the body of Fit-aurari Gabri might be removed to Magdala, returned up the hill, and found Theodore in Selassie. The letter of Sir Robert Napier was twice translated by Mr. Flad and Mr. Waldmeier to the King, and by the questions that he put it was evident that he fully understood what Sir Robert Napier required of him. He asked, "What do they mean by honourable treatment? "Do they mean to treat me honourably as their prisoner, or do they intend to assist me

* Mr. Flad's Statement. See page 45.

Theodore's reception of Sir R. Napier's letter.

"in recovering my country from the rebels? And have they taken into account my "numerous family, for I have as many wives and children almost as I have hairs on my "head? It would involve immense expense in England if they would undertake to "provide for them all." To this Mr. Prideaux replied, that the Commander-in-Chief did not give any information beyond what was in the letter. Mr. Waldmeier suggested that the King should write again, for further information on these points.

Theodore then ordered the envoys to go aside, while he dictated a paper to his Secretary. The tone of this letter was probably influenced by the fact that during the short interval, while the letter was being written, the remaining troops of the King, armed and arrayed for battle, took up a position in Selassie; and as the loss sustained in the previous action was found not to be so great as at first anticipated, Theodore contemplated an attack on the British camp, especially as the soldiers were heard to say, "The English are fond of sleeping; we must attack them in the middle of the night, and we will utterly destroy them ere they wake." The document was folded in the cover of Sir Robert Napier's letter of the morning, which Theodore returned as he considered himself insulted, because the servant of a woman had presumed to address him at all. It was not in the form of a letter, as he considered it beneath his dignity to hold any correspondence with Sir Robert Napier; neither was it sealed. The translation of its contents was as follows:—

Theodore's letter to Sir Robert Napier.

In the name of the Father, and the Son, and the Holy Ghost, one God in His Trinity and His Unity. Kása, whose trust is in Christ, thus speaks:

O people of Abyssinia! will it always be thus that you flee before the enemy, when I myself, by the power of God, go not forth with you to encourage you?

Believing that all power had been given to me, I had established my Christian people in this heathen spot. In my city are multitudes whom I had fed—maids protected and maidens unprotected; women whom yesterday made widows, and aged parents who have no children. God has given you the power. See that you forsake not these people. It is a heathen land.

My countrymen have turned their backs on me, and have hated me, because I imposed tribute on them, and sought to bring them under military discipline. You have prevailed against me by means of a people brought into a state of discipline.

My followers, who loved me, were frightened by one bullet, and fled in spite of my command. When you defeated them I was not with the fugitives.

Believing myself to be a great lord, I gave you battle; but, by reason of the worthlessness of my artillery, all my pains were as nought.

The people of my country, by taunting me with having embraced the religion of the Franks, and by saying that I had become a Mussulman, and in ten different ways, had provoked me to anger against them. Out of what I have done of evil towards them may God bring good. His will be done! I had intended, if God had so decreed, to conquer the whole world, and it was my desire to die if my purpose could not be fulfilled. Since the day of my birth till now no man has dared to lay hands on me. Whenever my soldiers began to waver in battle, it was mine to arise and rally them. Last night the darkness hindered me from doing so.

You people, who have passed the night in joy, may God do unto you as he has done to me I had hoped, after subduing all my enemies in Abyssinia, to lead my armies against Jerusalem, and expel from it the Turks. A warrior who has dandled strong men in his arms like infants will never suffer himself to be dandled in the arms of others.

It was an anxious hour for Sir Robert Napier when he received his returned letter from the hands of Prideaux and Flad. It was hard to leave countrymen to what seemed certain massacre, but he considered that a fuller atonement than the surrender of the captives, when they could no longer be retained, was required, and must be exacted; and, painful as was the thought of the possible consequences to the captives if Theodore's rage should become excited, Sir Robert Napier relied for their safety on the

apprehension of a renewal of the conflict which had demoralized Theodore's troops—an apprehension from which Theodore himself was not entirely free, as was involuntarily betrayed by Dejach Alami. Sir Robert Napier also relied on his threat, which he had impressed on Dejach Alami, of unrelenting pursuit, and of punishment of all who might in any way be concerned in the ill-treatment of the European captives; and he had pointed out how the power of Great Britain had already reached Magdāla, and that no corner of Abyssinia, however remote, could screen anyone whom England was determined to punish. It was a sad parting when Prideaux and Flad set out on their return to the mountain, bearers of the same letter which Sir Robert Napier had entrusted to them in the morning, and instructed to intimate that the British Commander would grant no other terms than those declared therein; for they themselves, and all others, considered that they ran the risk of any hasty resolve or any sudden fury of drunkenness on the part of the semi-barbarous king.

Proceedings in Magdāla.

But this sorrow was destined to be turned into joy. After the despatch of his insulting missive, Theodore had spent some time in meditation and prayer. He called a council of his advisers, when Ras Engeda, the Prime Minister, Dejach Abaye, Dejach Wahe, and others, strongly recommended the murder of the captives, and resistance to the last; but Basha Avito (who had been in the British camp) and Dejach Alami urged that the English had come all this way for their countrymen, who were of no use to Abyssinia, while, if they were killed, terrible vengeance would be taken. To these the King listened with favour, and sent Ras Assani to Magdāla to release the captives and bring them to him. While the messenger was absent, the King, mad at the idea of surrender, drew his double-barrelled pistol, and placed it in his mouth. Ras Engeda rushed forward to seize him and prevent the suicide. The pistol was wrested from his mouth, but in the struggle was discharged, and the bullet grazed his ear. Theodore then covered his head with a cloth, and lay down upon the ground, gradually becoming composed, and was only aroused by the intelligence that Mr. Rassam was approaching. The result of the interview was that Mr. Rassam, the remainder of the British captives, and several of those of other nations, were dismissed to the British camp, and Mr. Mayer was sent in advance to announce their approach. As he descended the hill he met Mr. Flad and Lieutenant Prideaux returning. These also now turned back, and one hour after sunset Mr. Rassam arrived in the camp a free man, and with him Consul Cameron, Dr. Blanc, Mr. Stern, Mr. and Mrs. Rosenthal, Mr. Kerans, and Pietro. These had all been liberated. They were escorted on the part of the King by Mr. Mayer, Mr. Waldmeier, Mr. Saalmüller, and Mr. Moritz (artisans), and by Dejach Alami and Aito Samuel. It was not understood whether the German artisans had been liberated by the King, or were expected to return to him. It was judged by Sir Robert Napier, that it would be better that they should return to Magdāla the next morning, until regularly discharged by Theodore.

Surrender of the captives.

Although matters had thus assumed a more hopeful aspect, yet there remained ground for anxiety. Mrs. Flad, whose fortitude during all her trials gained for her universal esteem, was still in the hands of Theodore, as she was unable, on account of her delicate state of health, to undertake the journey down the mountain that night; as were also the families of the German artisans and other Europeans, for whom Sir Robert Napier was bound to take thought. It was believed that they too had been liberated, and had only been prevented by illness, or other causes not resting with the King, from leaving the *amba*. Still the uncertain and dangerous temper of Theodore was too well known to prevent the life of anyone being considered perfectly safe while still within his reach.

Proceedings in Magdala.

The same Saturday afternoon that Theodore dismissed the British captives he seems to have turned some thought to the wrongs he had inflicted on his rightful Queen Terunesh. She had for long years been placed in Magdāla with her little boy Alumayou,* while Theodore had been leading an irregular life at Debra Tabor, and had lately insulted his Queen by the presence in Magdāla of his favourite concubine—a Yeju Galla woman, named Itamangu, who, while the Queen was neglected, received an almost daily letter from the King. On the afternoon of the 11th he sent a request to Terunesh to visit him at his tent in Islamgie, and they passed there some time together.

Events on the 12th April.

Early on the following morning (that of Easter Sunday) Sir Robert Napier received, by the hands of the King's scribe, Alaka Magada, and Mr. Bender, one of his German artisans, an Amharic letter, in which Theodore apologised for the tone which he had adopted in his communication of the previous day, and explained that he had written the former document after he had made up his mind to take away his life. He related how his attempt to carry out his design had failed, and that he now desired friendship, and was prepared to send down at once every European, along with an offering of cows, as it was the Easter festival. The letter was duly signed and sealed with the royal seal, and ran as follows:—

Theodore's second Letter.

In the name of the Father, the Son, and the Holy Ghost, one God:

The King of Kings Theodorus:

May it reach the beloved servant of the great Queen of England.

I am writing to you without being able to address you by name, because our intercourse has arisen so unexpectedly.

Apology for first Letter.

I am grieved at having sent you my writing of yesterday, and at having quarrelled with you, my friend. When I saw your manner of fighting, and the discipline of your army, and when my people failed to execute my orders, then I was consumed with sorrow to think that, although I killed and punished my soldiers, yet they would not return to the battle. Whilst the fire of jealousy burned within me, Satan came to me in the night, and tempted me to kill myself with my own pistol. But reflecting that God would be angry with me if I were to go in this manner, and leave my army without a protector, I sent to you in a hurry lest I might die, and all things be in confusion before my message should reach you. After my messenger had gone, I cocked my pistol, and, putting it in my mouth, pulled the trigger. Though I pulled and pulled, yet it would not go off. But when my people rushed upon me, and laid hold of the pistol, it was discharged, just as they had drawn it from my mouth. God having thus signified to me that I should not die but live, I sent to you Mr. Rassam that same evening, that your heart might be made easy.

Cows offered.

To-day is Easter; be pleased to let me send a few cows to you.

The reason of my returning to you your letter yesterday was, that I believed at that time that we should meet one another in heaven, but never on earth.

I let the night pass without sending for the body of my friend Fit-aurari Gabri, because I thought that after my death we should both be buried together; but since I have lived, be pleased to allow him to be buried.

You require from me all the Europeans, even to my best friend Waldmeier. Well, be it so; they shall go. But, now that we are friends, you must not leave me without artisans, as I am a lover of the mechanical arts.

This letter was translated by Aito Samuel from Amharic into Arabic, and by Mr. Rassam from Arabic into English, in the presence of Colonel Merewether, Mr. Flad, and Lieutenant Tweedie. Colonel Merewether pointed out that the letter contained nothing which should tend to cause an alteration in the arrangements already made for the return of Mr. Flad and the German artisans to the mountain to bring down Mrs. Flad and the wives and children of the others. The Commander-in-Chief sent a verbal

Sir Robert Napier's reply.

* "Alumayou" means, "I have seen the world."

answer, to be taken to Theodore by Aito Samuel and Dejach Alami, that "a palanquin was sent up for Mrs. Flad because she was not well, and that Sir Robert Napier desired the King to send her and all the other Europeans that same day down to the British camp."* Mr. Rassam has, in his Political Report, stated that the Commander-in-Chief accepted, verbally, the offering of cattle proposed by Theodore. This assertion has been contradicted by both Colonel Merewether and Lieutenant Tweedie.† After the departure of Aito Samuel, Colonel Thesiger the Deputy-Adjutant General having elicited from Mr. Rassam that 1,000 cattle were to be sent down from Theodore as a peace-offering, immediately reported the fact to the Commander-in-Chief, who, on learning the magnitude and nature of the offering, at once instructed Captain Holland, in charge of the Quartermaster-General's Department, to send one of his assistants to the outlying picquets, to see that the cattle were not admitted until Theodore's full acceptance of the conditions proposed on the previous day should enable him to receive them, or to assume towards the King a friendly bearing.‡

The offer of cattle.

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* Mr. Rassam's Political Report, paragraph 384.

† Statements of Colonel Merewether and Lieutenant Tweedie.

‡ The following is the statement of the Rev. J. M. Flad on the subject of the offer of the cattle:— Mr. Flad's statement.

"After King Theodore had been defeated on the 10th of April, Lieutenant Prideaux, myself, and Dejach "Alami, son-in-law to the King, were sent, on the morning of the 11th April, to his Excellency the Commander-"in-Chief of the British Army, to sue for peace.

"A young native, servant of Mr. Rassam, was sent by the King with instructions to return immediately "after we had been received by Sir Robert Napier, or in case of his Excellency not yet having arrived at Arogie, "by the General in charge of the advance guard. The King was anxious to learn what kind of reception we "had met with in the British camp.

"The message we had to deliver from the King was,—'I thought I was the only brave man, but I have "'found out that you are stronger than I; I therefore wish to be reconciled with you.' In answer to this we "received a letter from his Excellency, with which we returned to the King. Before we started from the "British camp, Dejach Alami was informed with the contents of the letter. In the letter of Sir Robert Napier, "the King was requested to bring, the very same day, the 11th of April, into the British camp, all the Europeans "in his power.

"At the special demand of Dejach Alami, to give the King twenty-four hours' time, his petition was granted. "Dejach Alami promised to be responsible that all the captives should be safely delivered into the British camp.

"To this, Sir Robert Napier replied, that he desired the King himself should surrender, and come into the "English camp. Dejach Alami said, regarding the King's coming, he could not promise anything, but he "would try his best to induce the King to comply with the wishes of his Excellency. Sir Robert Napier also "informed Dejach Alami, that in case any harm should be done to any of the captives, it would be severely "punished on the King's officers and soldiers, if they would not use their influence to prevent the King from "cruelties. They should not think of running away, because, if they tried to do so, they would be pursued into "the furthest corner of Abyssinia; there was no escaping for them. The guns and rockets and Snider rifles, "which had been used on the 10th of April, were shown by Sir Robert Napier to Dejach Alami; also the "Armstrong steel guns and the mortars, having just arrived. The latter was told that the arms used against "them yesterday were but mere playthings in comparison to these destroying machines; if the King would "not surrender and give up, the big mortars and the Armstrong guns would be sent up against him, and then "none of his soldiers would escape alive. Horror-struck and amazed, Dejach Alami looked at the elephants "which were standing like giants before him, still having the Armstrong cannons on their backs. On taking "leave, to go up to the King, Dejach Aalami said to me, 'There is no escape for us' (meaning the King and "his followers); 'we must surrender, or we shall all be killed. We have no chance to run away; they would "'pursue us, and we are surrounded by our enemies, the plundered Woro-Häimano people and the Wollo "'Gallas. I am almost sure,' he continued, 'that the King will send down the captives, but I fear he won't "'go down himself, partly from fear and partly from being mortified.' The letter from Sir Robert Napier to "the King was twice translated by Mr. Waldmeier and myself; and by the questions he put to us, I am "convinced that he fully understood what Sir Robert Napier required of him. He asked, 'What do they mean "'by honourable treatment? Do they mean to treat me honourably as their prisoner, or do they intend to "'assist me in recovering my country from the rebels? And have they taken in account my numerous family, "'for I have so many wives and children, almost, as I have hairs on my head? It would involve immense "'expense on England if they would undertake to care for them all.'

"To this, Mr. Prideaux replied that the Chief did not give us further information, except that which was

The offered tribute of cattle was apparently a ruse devised by Theodore or suggested to him, for the purpose of precluding Sir Robert Napier from further hostile action. If the British Commander had accepted a present from Theodore one day, and had attacked him the next, it would have been a violation of the commonly accepted *jus gentium* of Abyssinia, especially if the circumstance were looked at by itself, and without reference to the fact that Theodore had on the previous day been plainly told that nothing but his own surrender would satisfy the British Commander.

" in the letter. Mr. Waldmaier suggested to the King that he ought to write again on this point, and ask " further information.

" The King, who was in a sad and perverse state of mind, then ordered us to go aside and take a seat, whilst " he dictated a letter to his Secretary. During this short interval, the whole army of the King, in full arms as " if they were ready for battle, came up and took possession of Selassie. Mr. Waldmaier told us, whilst we " were waiting for the letter, that the loss in the King's camp was not so great as had been reported on Good " Friday night. It had been said that the half of the King's army had been wounded and killed. The letter " being finished, the King handed it over to Mr. Prideaux, together with the letter we had brought up from " his Excellency; and we too were charged to go, with all possible speed, down into the British camp and " deliver the letter. Dejach Alami received orders to remain with the King. My impression was that the " King would venture another attack on the English troops. I also heard the King's soldiers say to one another, " 'The English are fond of sleeping; we must attack them in the middle of the night, and we will utterly " 'destroy them ere they get awake.'

" We delivered the King's letter to Sir Robert Napier. It did not contain any answer to his Excellency's " letter: only the declaration that he (the King) would never suffer himself to be carried in the arms of others.

" Towards evening, on the 11th, Lieutenant Prideaux and myself returned to the King's camp with the letter " that bore the message that no other terms than those already offered could be granted. The same letter " of Sir Robert Napier that we had brought up in the morning, we again took back in the evening to the King. " On our way upwards we met Mr. Mayer, who informed us that Mr. Rassam and party were coming down. " This was entirely an action of the King's own free will.

" I afterwards learned that Dejach Alami had exerted all his influence to persuade the King to surrender " the captives to the British General. The artisans, Mr. Waldmaier, and companions aided in concert with " Dejach Alami.

" When the King had given orders that the captives should march down into the British camp, his Prime " Minister, Ras Engeda, and others of the King's attendants (natives), wanted to induce the King not to let the " captives go. 'Our friends and kindred have been killed by their brethren; we won't send them down alive,' " they said. The King's reply was, 'Don't speak to me any more about killing them; they have done me " 'no wrong, and not one hair of their head shall fall down.' When the King had seen Mr. Rassam, the " captives marched down, and reached the head-quarters of the British camp an hour after sunset on the 11th " of April.

" God, who had hardened his heart for four and a half years, had in this last critical moment softened him " so down that he could no otherwise but let his victims pass before him in peace.

" As Mrs. Flad and children had been left behind, I had to return to the King on Easter Sunday morning " (the 12th). I was accompanied by the King's artisans, who, by order of the latter, were escorting the British " captives down into the British camp. Dejach Alami likewise was returning with us, bearing a verbal message, " by which the King was requested to send down, during that same day (the 12th), all the Europeans in his " power. I must also mention that before our leaving the British camp a letter from the King to his Excellency " arrived, which was read and translated previous to our returning. As much as I can recollect now, did the " letter contain an apology from the King for not having his last letter to Sir Robert Napier began as he " (the King) was usually beginning his letters, viz., 'In the name of God the Father, God the Son, and God " 'the Holy Ghost'; as also for having omitted to put his seal at the bottom of it. He likewise apologised for " having sent Sir Robert Napier's letter back. As a reason for having done so, he said he did not think he " would meet Sir Robert Napier in this life. He further said in his letter, 'To make your heart easy I have " 'sent over to you, last evening, Mr. Rassam and his companions. If you wish me to send down all the " 'other Europeans, I will comply with your wishes.' Regarding Mr. Waldmaier (his Engineer) he observed, " 'Remember me, and keep in mind that I am a friend of arts.' In a postscript of that same letter, the King " said, 'To-day we have Easter Sunday. I have ready 1,000 cows and 500 sheep. May I send them to you?'

" This letter having been read, Dejach Alami received a verbal message from his Excellency, which was " as follows:—That a palankin was sent up for Mrs. Flad because she was not well; that Sir Robert Napier " desired him to send her and all the other Europeans down to the British camp that same day (Easter Sunday, " the 12th of April); that a letter should be written during the day (12th of April), and by the King's first

The four Germans who had escorted Mr. Rassam's party down the evening before, with Dejach Alami, Mr. Flad, and Aito Samuel, returned to the mountain. It was not considered necessary to send back Lieutenant Prideaux, as he belonged to Mr. Rassam's party, which had been formally dismissed. They took up with them the body of the Abyssinian leader of Friday, the Fit-aurari Gabri. The King, as well as other Abyssinians, were gratified at this act on the part of the English General. The body was immediately interred at Magdála. On reaching the King's camp, the messengers found him seated outside his tent. Dejach Alami delivered the compliments of Sir Robert Napier to the King, with an acknowledgment of the arrival in the British camp of Mr. Rassam's party, and a reiterated demand that the remainder of the Europeans should be sent down. Theodore at once replied, "Well, I give every one of them "permission to leave Magdála." The King then asked whether, at the time when Mr. Flad and his companions had left the British camp, the letter carried by his scribe and Mr. Bender had arrived. Aito Samuel replied, "that the letter was presented to the

Return of the Germans to Magdála.

Proceedings in Magdála.

"Secretary, the same who had been the bearer of the King's letter on Easter Sunday morning, sent up to the "King.

"On our way upwards to Islamagie, I asked Aito Samuel (a servant of the King who was given to Mr. Rassam "as interpreter at his arrival in the country), 'How is it with the cattle and sheep?' 'They are accepted,' he "answered!

"We took up with us the remains of the King's brave and beloved General, Fit Aurari Gebry, who was "Commander-in-Chief on Friday, but was killed. The King, as well as other natives, were pleased with this "act of generosity on the part of the English General. I heard them say, 'These English people are our true "'friends, and they are Christians indeed.' Before I left Islamgie, the body of the General was interred at "Magdála.

"On reaching the King's camp we met him seated outside of his tent. When Dejach Alami delivered "his message from Sir Robert Napier, the King inquired, 'Is the cattle accepted?' To which Aito Samuel "replied, 'Yes; they are accepted.'

"Then the King said to me, 'Take your wife and children, and go down with Dejachj Alami and the "'cattle, and tell all the Europeans that they all shall go down.' As Mrs. Flad was unable to be hurried down "so quick on account of her position, Mr. Waldmaier was ordered to go down with the cattle.

"When I was ready to start, prudence advised me to go over once more to the King to take leave of him. "When I was approaching him he asked, 'Are you ready?' 'Yes.' I answered. 'Well, go,' he returned; "'may God give us a happy meeting, Arto Flad.' These were the last words he spoke to me. I went home, "and found my wife and children ready. We went away from the King's camp, and, hurrying downwards into "the British camp, thanked God who had so mercifully spared our lives, and delivered us out of the hand of "our enemy.

"On our way to the British camp we met the people who had charge of the cattle that had been sent down "as a present to the European General. They told us that the cattle had not been accepted.

"The report that the cattle had not been accepted reached the King ere all the captives, and some of the "King's own artisans, had left the King's camp. These were Mayer, Steiger, Brandeis, Esler, Schiller, and "Mackerer, captives, as also some of the Europeans who had been serving the King, left behind. As far as I "could make out, the cattle and sheep were eaten up by the King's own soldiers, who had surrendered to Sir "Robert Napier on the 13th of April.

"On Monday morning, very early, I was asked by General Merewether to translate, together with "M. Münzinger, a letter from his Excellency Sir Robert Napier to the King Theodore; but before we had "begun, messenger after messenger arrived from different parties, stating that the King had fled. His chiefs "sent to Sir Robert Napier, urging him to go up to Magdála and take possession ere the Gallas would come and "kill them. Among these messengers were several men who had been sent by the native prisoners, who were "still kept there by hand and foot chains.

"A little after, three Rases (Ministers of State), together with some other great people, arrived, stating "the fact that the King had gone off before daybreak; that his whole army was ready to submit to Sir Robert "Napier.

"At 9.30 we were marching towards Magdála. Half way up an Abyssinian informed me that the King "had come back, and was making preparations to defend himself with about 250 of his followers, and that he "was taking up some of his guns to Magdála. I immediately communicated these news to General Merewether, "and was then requested by his Excellency the Commander-in-Chief to show the way up to the 33rd Regiment, "over a rocky path with which I had become acquainted on Saturday, up to Selassie.

"Commander-in-Chief and translated." The King inquired what answer had been given about the offered cattle. Aito Samuel told him that Sir Robert Napier had expressed his willingness to accept them. The King then ordered 1,000 cattle and 500 sheep to be sent down to the British camp, and told Mr. Flad to take his wife and children, and go down with Dejach Alami and the cattle; but as Mrs. Flad was unable to be hurried down so quickly, on account of her illness, Mr. Waldmeier was directed to go down with the cattle. Yet Theodore did not seem confident of the reception of his offering, for although he withdrew his artillery from Fahla, he placed it in a prepared position in the market-place of Islamgie, to cover the approach to Magdāla. When he heard that the cattle were stopped at the picquets, the artisans, their women and baggage, had not yet left the mountain. Theodore sent for them; and when they came, he ordered them to go down to the British camp, and on seeing them depart, said to his chiefs, "Surely "it is peace, now that they have taken my power from me—surely it is peace!" But even after the arrival of the artisans, the cattle were still kept outside the British sentries. Theodore saw that he could not obtain peace without his personal surrender. He went into the *amba*, and spent a restless night.

That afternoon all the Europeans who had been held in captivity arrived in camp, except the Frenchman, M. Bardel, who was struck down with fever and sunstroke, and who, when of no further use to Theodore, had been sent out of Magdāla, and quartered in a miserable hovel in Islamgie. The following is the list of the restored captives:—

Names of the captives released.

Consul Cameron; Mr. Rassam; Mr. Flad, Mrs. Flad, and three children; Lieutenant Prideaux, Bombay Army; Dr. Blanc, Bombay Army; Rev. Mr. Stern; Mr. Rosenthal, Mrs. Rosenthal, and

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"The whole of King Theodore's troops surrendered to Sir Robert Napier, laying down their arms before "him.

"When the leading regiment came down from Selassie to Islamgie, having captured four of the King's "cannons, about fifteen horsemen, *amongst whom was the King himself*, came upon them and fired at them, which "was answered by the British soldiers who had been on the plain. The King, with his men, retreated to the "fortress, and the gate to the stronghold of Magdāla was closed.

"When, after 3 P.M., Magdāla was stormed, the King, with his men, defended themselves bravely within "the first gate; and before the English soldiers could fire a shot, and before they could reach the gate, they "were fired at by the King and his men. When the King saw that our soldiers were coming up the wall and "the hedges, he fled to the second gate, within which he was afterwards found dead, having killed himself by "his own pistol. According to the statement of Mr. Waldmaier and others, this pistol was the very same which, "five years ago, Captain Cameron had made the King a present of.

(Signed) "JOHN MARTIN FLAD,
"*Missionary of the London Society for Promoting*
"*Christianity amongst the Jews.*"

"My Lord,

"Your Lordship will permit me to add a few facts which I had forgotten when I did write my Memo-"randum, but afterwards I remembered them again.

"When, in going up to the King on the 12th of April, I asked Aito Samuel, 'How is it with the cattle?' "he replied, 'They are accepted.' I asked, 'Who told you so?' His reply was, 'Mr. Rassam.' To this I "said, 'Everything looks well for the King.' To this, Aito Samuel replied, 'What do you trouble yourself "'about this? If but only you with your family are out of his hands, let the English do with him whatever "'they please. Would it not be a blessing to our country and to our people, if he (the King) who does nothing "'but plunder the country, and kill and burn the defenceless peasants, will be removed from his throne. I "'myself am anxious to get away from him.'

"When the King had given permission that we should go down into the British camp, Samuel said to me, "'Make haste and take your wife and children into the British camp as quick as you can.'

"My own impression was that the cattle were not accepted by your Lordship, and that they would be stopped "as soon as they reached your Lordship's camp; therefore I hastened Mrs. Flad to get ready with all speed, saying "'to her, as she will recollect now, 'Let us go before the news reaches the King that the cattle are refused.' "And from what I heard from Aito Samuel, I am almost sure that he has been under the same impression, "though he used in my presence all the cunning to make King Theodore believe, that if he only complied with "the wish of the British General, he would not only gain his friendship but get valuable presents too."

one child; Mr. Kerans; Pietro, servant of Consul Cameron (Italian); Mr. Staiger, German missionary, sent by a Scotch Society; Mr. Brandeis, as above; Mr. Essler, German naturalist; Mr. Schiller, ditto; M. Makerer, Frenchman, a servant originally of Consul Cameron, latterly of Theodore; M. Zander (German), artist, native wife, and four children; Mr. Waldmeier (Swiss), an Abyssinian wife (the late Mr. Bell's daughter), and one child; Mr. Saalmüller (German), wife (viz., daughter of Bell), and one child; Aleegas (son of late Mr. Bell), an artisan; Mr. Bender (German), wife, and three children; Mrs. Kenalen, widow of a German artisan, and one child; Mr. Moritz, wife, and child; Mr. Mayer (German), artisan, wife, and three children: M. Bourgaud (French), artisan, French wife, and five children; Mr. Schimper (German), botanist; Mr. Schimper, jun., an artisan; Mr. M'Kelvie (Irishman), servant of Consul Cameron; Mr. John Parkins, artisan.

CHAPTER XIX.

OPERATIONS ON THE 13TH APRIL (CAPTURE OF MAGDĀLA).

Theodore attempts to escape.

AT sunrise on the morning of Easter Monday, April 13, 1868, Theodore arose, and, calling to his troops, said: "Warriors who love me gird yourselves; leave all behind, "take nothing but arms, and follow me; the time has come to seek another home." He had apparently determined to make an attempt to escape, and went out of the fortress near the Kaffir-ber Gate, at a place where it was possible to descend towards Sangallat.* He was followed by two chiefs of rank, and about two thousand men, variously armed. As he passed down he asked where the advance-guard was, and on being told that they were in rear ordered them to the front. They refused, saying that they would never flee before an enemy again, and would rather seek death in Magdāla. Theodore pondered for a brief space, and then, saying "Let it be so," re-ascended the mountain. It would have been impossible for him to continue his journey alone, as the cries of the Gallas—who, under the guidance of Meer Akbar Ali, were watching the issue from the fortress on that side—could be distinctly heard. On re-entering the fortress he told all who were not prepared to share his fortunes to the last to provide for their own safety. Thousands thereupon left him, and ultimately surrendered to the British.

Sir Robert Napier, at the request of Dejach Alami, had promised to abstain from hostilities for twenty-four hours. By Monday morning forty-eight hours had elapsed, but the prescribed conditions had not been complied with, and no sign had been made by the King of acceding to the important demand that he should surrender himself. The considerations which, with the lives of so many of his countrymen in Theodore's hands, had impelled Sir Robert Napier to impose this condition, had lost none of their force now. It was essential for the vindication of the national honour, which he had so grossly insulted, that he should be deposed. Moreover, the British Army could not have reached Magdāla at that season unless it had been aided by the chiefs and people of the country. Kassai's supplies of flour had rendered it, for the time, independent of the failure of Zula to furnish that commodity. The grain of Enderta and Agamé had enabled its transport animals to live and advance; but this aid was given in the full belief that Theodore would be removed, and had the British Commander failed to displace him he might have had to fight his way out of the country. His failure to submit himself left no other course open than to proceed against him as an enemy. Reliable information reached Sir Robert Napier that the Abyssinian Army was recovering from its defeat; that many soldiers, who had been unable to return to Magdāla on the night of the 10th, had since rejoined their ranks, and that fresh defensive arrangements were being made. On Monday morning, accordingly, be prepared to attack the enemy's position.

Preparations to storm Magdāla.

The troops were paraded on the plain, at the foot of the mountain, ready to

* Statement of Welder Gabre, gun-bearer to Theodore, who was with him.

ascend. For the first time the force fell in, in concentrated order. Hitherto the Brigades had been separated, and so large a portion of men had been scattered along the line of baggage, that there had been no opportunity of seeing them in force. The Cavalry were not present, as they had been sent to close the issues of Magdála on all sides not held by the Gallas. There was a formidable force of artillery however; the Armstrong Battery, two steel Mountain Batteries, the Naval Rocket Brigade, and two 8-inch mortars. The Armstrong guns and the two mortars, the latter manned by a detachment of the 5th Battery 6f the 25th Brigade, under the command of Lieutenant-Colonel Wallace, R.A., took up a position with Selassie in front and Fahla on the right, whence they could fire at long ranges and aid the movements of the column if the enemy should offer opposition to its advance up the hill to Islamgie, for Sir Robert Napier—who had first intended to assault Fahla from the side which fronted his camp, and was screened from the fire of Selassie and Islamgie—had, under the altered condition of the enemy, when Theodore had lost half his army and his bravest chiefs, by death, wounds, or desertion, determined to attack Islamgie by the King's Road.

Before the troops were formed, intelligence was brought to Sir Robert Napier that Theodore had left Magdála, a statement confirmed by the appearance of several chiefs, with an offer to surrender into the hands of the British the two strong outposts of Fahla and Selassie, held by their people. He at once sent word to the Gallas, offering a reward of 50,000 dollars for Theodore's capture should he really have escaped from Magdála.* Reward offered for Theodore's capture.

* The following is a translation of a letter from Meer Akbar Ali, of the Intelligence Department, reporting his proceedings during his mission to Masteeat, Queen of the Wollo Gallas, to whom he had been deputed by the Commander-in-Chief, for the purpose of encouraging her people to oppose Theodore, in the event of the latter attempting to flee from Magdála.

Meer Akbar Ali's Report on his mission to the Gallas.

"On the 8th April, I left his Excellency's camp on Talanta, accompanied only by a few Galla guides, and "reached, on the evening of the 9th, the Galla hamlet of Goshmeda. The Gallas whom I met seemed inspired "with a profound dread of Theodore. Their confusion was increased by their uncertainty as to the objects of "the British Commander in approaching Magdála with his army. At the same time, they had a cordial hatred "of Theodore, who had inflicted, both on themselves and on the Mahommedan religion, which they profess, "innumerable outrages. On my conveying to them his Excellency's message that he was about to attack "Magdála, and had no other enemies in all Abyssinia than Theodore, their courage revived, and numbers of the "people returned to their homes.

"I was treated by all classes with the utmost respect and hospitality.

"Masteeat had left her residence on the hill of Lugot, which is about five miles from Magdála, on the "Talanta side of the Bashilo. The reason assigned was the necessity of protecting certain remote villages, but "I believe the true cause was that she feared the British army. The news of my coming and of my speeches "soon reached her. On the 13th instant she herself and her young son Emam Ahmad, in whose name she "reigns over the people, met me near Lugot. I gave her the presents his Excellency had intrusted me with for "the purpose. She was greatly pleased that his Excellency had sent one of her own religion to assure her of "his own and his country's friendly feeling towards her people.

"Before her own arrival I had, however, secured the confidence of the Gallas, and had induced their Chiefs "to invest Magdála on the Kafirber side, for the purpose of preventing Theodore's escape. Everything had "been done by the Chiefs in accordance with my directions. . . . . After Masteeat herself arrived near "Magdála the number of armed Gallas who were then available for the work of watching the outlets from the "fortress was not less that 8,000. These were under their own Chiefs; and I occupied myself night and day, while "the British army was operating against Magdála, in going from post to post of the Gallas, seeing that strict "watch was preserved.

"Every human being that attempted during that time to leave Magdála on the Kafirber side was either "driven back by the surrounding Gallas, or else fell into the hands of the latter, who brought him to me.

"When Theodore himself left the fortress with a few followers on the morning of the day on which it was "stormed, I believe the reason he retraced his course into Magdála, and abandoned his purpose of trying to "to escape, was because he saw the large numbers of Gallas who were watching for him from the adjoining "mountain sides.

"The Gallas never wavered in their obedience to my instructions, except for a few minutes when news was "brought us that Theodore, after his defeat at Arogie, had sent Mr. Flad to the British camp to sue for

Scarcity of water had rendered it impossible to retain any considerable body of Cavalry before Magdāla. It was important, in case of an attempt by Theodore to fly from the fortress, that the western side should be immediately watched; and the personal escort of the Commander-in-Chief, with a few detached men of other corps, was sent, under command of Lieutenant Scott, A.D.C., to observe that quarter until the arrival of the main body of the Cavalry* (consisting of 3rd Dragoon Guards, 3rd Bombay Cavalry, and 12th Bengal Cavalry), under Colonel Graves, who completed the investment to the Kaffir-ber Gate, which was watched by the Gallas. The Bashilo was held by the Sind Horse, under Major Briggs, and detachments of the 3rd Dragoon Guards, and 3rd and 12th Cavalry, under Major Miller, to secure that point, and provide against the escape of the enemy by the Menjara Ravine.

Investment by cavalry.

Force on the Bashilo.

At seven o'clock a portion of the 3rd Bombay and 12th Bengal Cavalry, mustering fifty sabres, under Lieutenant-Colonel Loch, were sent up to the Fahla saddle, and placed at the disposal of Captain Speedy, the Amharic interpreter, to communicate with those of Theodore's troops who wished to surrender.

Advance on Islamgie.

Sir Robert Napier then ordered Sir Charles Staveley to advance on Islamgie and occupy Fahla and Selassie, in the same order as had been designed for the assault, and without relaxing any of those precautions which had been considered necessary for the attack.

Description of Fahla, Selassie, and Magdāla.

The three hills of Fahla, Selassie, and Magdāla are each surrounded at the summit by steep and precipitous scarps. Fahla and Magdāla are connected with Selassie by saddles, nearly at right angles to the central hill. A tolerably good, but in some places very steep, road led from the British camp up to the north side of Fahla, over the saddle, along the south of Selassie, and over the next saddle Islamgie, into Magdāla. A pathway branching off this road, at the Fahla saddle, to the left, ran along the foot of the Selassie scarp for some distance, and then turned up a zigzag to the top, near the entrance to the fortress of Magdāla. Another pathway led direct up to Selassie from the Fahla saddle. Neither of these paths are found practicable for mules. The summits of Fahla and Magdāla are flat; that of Selassie slopes upwards from the scarp to the centre, and its summit commands the two other mountains.

Position of Artillery.

On the advance being ordered, at half-past 8 A.M., the Armstrong guns, and the two 8-inch mortars, were placed in their covering position; the mountain battery, commanded by Lieutenant-Colonel Penn,† having ascended a short distance with the column, was placed in a position on a spur on the left of the road, to cover the head of the ascent; whilst the mountain battery, commanded by Captain Twiss,‡ followed in the rear of the leading battalion of infantry. Both mountain batteries were under the command of Lieutenant-Colonel Milward. The division moved up the road with the 2nd brigade, headed by a ladder-party of sappers in front.

" peace. I assured the Gallas that the British would never make peace with him. They then recovered their " original zeal in co-operating with me to prevent Theodore's escape.

" Having to-day received official intimation of the death of Theodorus, and his Excellency's orders for my " return to head-quarters, I have come into camp accordingly.

" I shall prepare hereafter a fuller account of my proceedings and observations while employed on the " above mission.

" Camp near Magdāla, 16th April, 1868. " MEER AKBAR ALI."

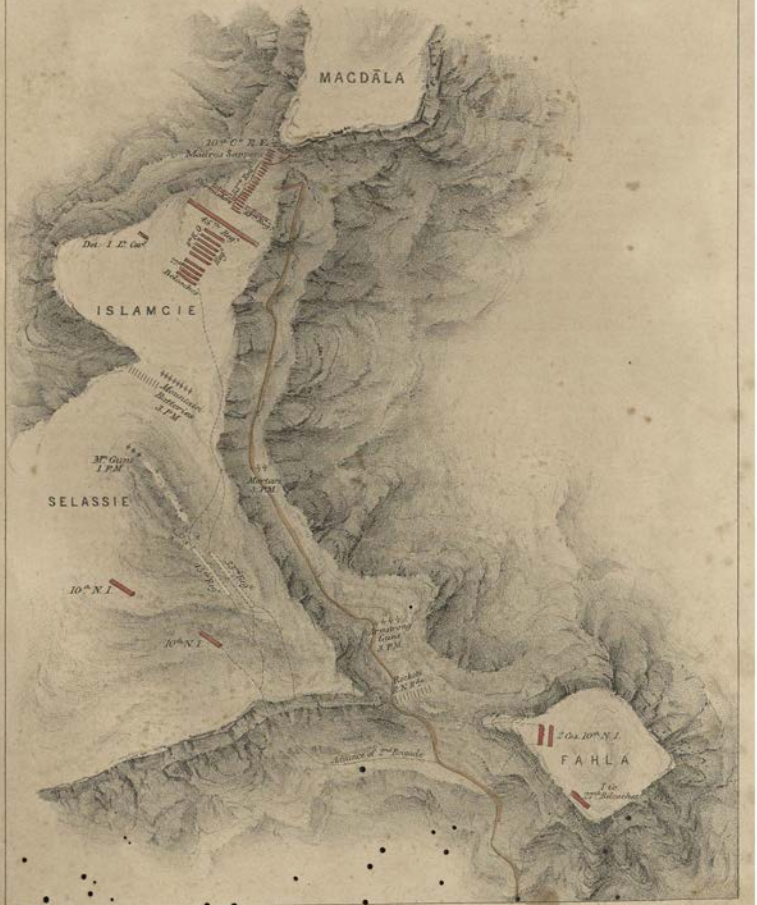
Strength of investing Cavalry Force.

* 3rd Dragoon Guards	.. .. ..	173 men
3rd Bombay Cavalry	.. .. ..	183 „
12th Bengal Cavalry	.. .. ..	96 „
Total	..	352

† A Battery, 21st Brigade, Royal Artillery.

‡ B Battery, 21st Brigade, Royal Artillery.

ATTACK ON MAGDĀLA



Lith. at the Topl. Dept. of the WAR OFFICE
COLLECTION H. JAMES SIR E. Expedition

"It was a fine sight to see the long line of red, Royal Engineers (toiling under their "scaling-ladders), Sappers, 33rd and 45th Regiments, the 4th King's Own in their grey "kakee, the Belooches in their dark green, the Royal Artillery in blue, and the mountain "batteries on mules, winding up the steep and picturesque path that led to the Fahla saddle; "while down the sides of the hill, by every sheep-track, streamed the families of the soldiery "of Theodore. Old men and boys, mothers, and families with their household treasures, "were seeking an asylum in the Arogie valley till the storm of war should be over above. "Sword and helmet sparkled in the morning sun, the banners were unfurled, the breeze "was just enough to display their gay colours, and the proud names woven thereon, and "all nature seemed to contribute to the splendour of the pageant.

"Inspirited as the soldiers were by the thought that their toils were now almost "over, and that success was about to crown their enterprise, their ardour was also "strengthened by the uncertainty which surrounded everything up to the very last "moment. For all anybody knew to the contrary, Theodore might have 10,000 armed "men in battle-array on the top, or he might, as already reported, have died a suicide's "death."* For, as the column was ascending the mountain, contradictory statements were continually brought to Sir Robert Napier. Hardly had one messenger confirmed the report of his flight, than another would come with the information that he had returned to Magdāla, and was busily engaged in massacring the Abyssinian prisoners confined there, to be followed by a third, stating that he had committed suicide.

Occupation of Fahla.

A company of the Belooch Battalion, under Lieutenant Beville, was sent up the first accessible spur on the right, into Fahla, and was supported by two companies of the 10th Regiment of Native Infantry, which, under Colonel Field, climbed up the next spur.

Selassie.

About midday the head of the column reached the Fahla saddle, when the advance guard of two companies of the 33rd Regiment was pushed on to the summit of Selassie, supported by the remainder of the 2nd brigade and the B mountain battery; but the path was so bad that the mules could not accomplish it, and only three mountain-guns could be passed up, and those by hand. When Selassie was crowned by the 2nd brigade Theodore's troops there were ordered to lay down their arms and retire to the plain below. The first portion of this order was immediately obeyed: the people everywhere laid down their arms, and with the women and children left the mountain as quickly as the narrow exit permitted. It was hardly possible to form a correct estimate of their numbers; they covered the whole face of the hill, and the paths leading from it were thronged for many hours during their migration. It was believed that the numbers could not have been less than from 25,000 to 30,000, of whom about a third were armed men.

General description of the action before Magdāla.

The two hills of Fahla and Selassie formed a strong position, and if they had been defended with ordinary determination, a serious loss of life would have occurred in their capture. When they were secured orders were sent for Lieutenant-Colonel Wallace to bring up the Armstrong guns and the 8-inch mortars. This was accomplished by means of the elephants.

The state of matters in the actual stronghold of Magdāla remained as much a problem as ever for the British Commander to solve. About noon Theodore, with about a hundred picked followers, left the *amba* and went towards the market-place in Islamgie where his guns were placed. These he intended to move into his citadel, and with them to defend it resolutely to the last.

At this time the detachment of Bombay Light Cavalry, under Lieutenant-Colonel

* Shepherd's Campaign in Abyssinia.

Loch, had arrived on the Islamgie saddle; and Sir Charles Staveley, seeing the advance of the Abyssinians from the fortress towards their guns, pushed down a company of the 33rd Regiment to the saddle, with orders to keep the guns under their fire. Theodore met these two detachments. He then called for his horse and having mounted it and ordered two of his guns to be dragged into Magdāla, began careering about, boasting of his prowess, firing off his rifle as a challenge, and calling on a champion to come out and meet him. He did not, however, come sufficiently far to allow Lieutenant-Colonel Loch to intercept his retreat to the fortress, but this officer was able, by the fire of the infantry, to prevent the King or his followers making their escape by any path leading down from the Islamgie saddle. A desultory fire from small guns was meanwhile maintained against the detachments, which was answered by turning some of Theodore's own guns against him, when he withdrew to where his people were engaged in dragging the guns toward the gate of the fortress. Several roundshot fell near him; still his men did not abandon the guns until a rifle-bullet from the infantry killed one of them. All then retired into the *amba*, and the gate was closed.

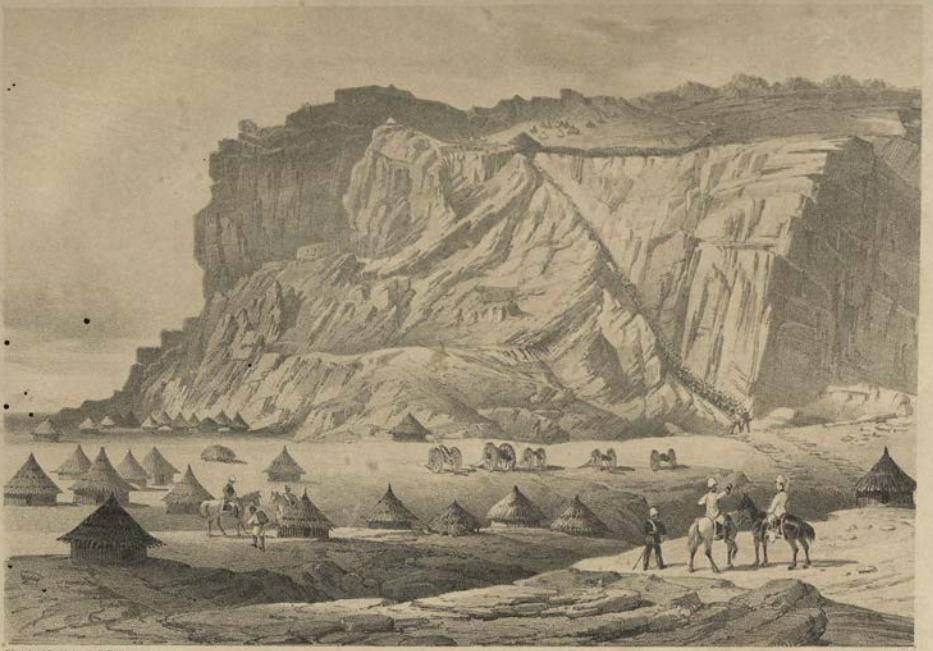
A pause then ensued, when the few troops on the Islamgie saddle, at the foot of the precipice on the right, guided by a foul odour of putrefaction, discovered the remains of some 200 or more Galla prisoners whom Theodore had massacred on the 9th and thrown over the rock. They lay there, old men, women, and children—some manacled, and a few chained together. This sight of wholesale slaughter caused a deep feeling of indignation against Theodore among the British soldiery.

The British Commander in the meantime reconnoitred Magdāla, and prepared for the attack of the fortress. Beyond the saddle of Islamgie, the rock of Magdāla rose in a steep scarp 300 feet in height. A double line of defence, in each of which was a narrow gate, crowned the scarp; to these a steep, narrow, and rugged path led up. Whatever number of defenders the fort contained was studiously concealed; it was plain, however, that the place was not abandoned, as the gates which had at first been open were closed, and a few figures of armed men, one of which was recognised to be that of Theodore, were occasionally seen in the *amba*.

About 1 p.m. the Commander-in-Chief directed a sharp cannonade to be directed on the gate. The three mountain-guns on Selassie fired a few rounds from that position, when it was found that Colonel Milward had placed the three other guns of the B Battery with the A Battery in a better position at the foot of Selassie, and directly opposite the gate of Magdāla, from which they were 1,300 yards distant. The three guns were therefore moved down from Selassie, so that Lieutenant-Colonel Milward had twelve guns, supported by four rocket-tubes, under his supervision. The cannonade did not elicit any demonstration from the fortress, and the Commander-in-Chief, in consideration of the women and children who were known to be in Magdāla did not advance his artillery beyond this position, whence it could fire on the defences without doing serious damage within the interior of the *amba*.

Sir Charles Staveley then made dispositions for the assault of the fortress by the 2nd Brigade, supported by the 1st, which had advanced along the lower road after Selassie had been occupied by the 2nd brigade.

The 33rd Regiment were to advance across Islamgie, two companies being in skirmishing order, and two in support; the remaining six companies, under Major Cooper, headed by a detachment of the Royal Engineers, and the "K" Company of Madras Sappers and Miners, under Captain Elliot, with powder-bags, crowbars, and ladders, were to form the storming party. Two companies of Bombay Sappers and Miners, under Captain Leslie and Lieutenant Leacock, were to follow in rear of the



Sketched by Major A. G. F. Hogg.

James Ferguson Lith.

MAGDĀLA.

ENTRY OF RESERVE BRIGADE.

Lith. at the TOPL DEPOT of the WAR OFFICE
COL. SIR H. JAMES R.E. Director

33rd Regiment. On nearing the foot of the steep ascent up to the gate of the fortress, the skirmishers were to halt, and, reinforced by the supports, maintain a steady fire upon the gate and the defences during the ascent of the storming-party. The 45th Regiment under Lieutenant-Colonel Parish, was to advance in line in rear of the 33rd Regiment, and the 1st Brigade—with the exception of the Punjab Pioneers, and two companies of the 10th Native Infantry, which had been left to guard the camp at Arogie, some distance in rear—was to move up in column as a reserve. Two companies of the 10th Native Infantry, under Colonel Field, were to remain on Selassie, to guard the arms surrendered by Theodore's troops, and clear the Abyssinians off the mountains. The Armstrong guns and 8-inch mortars, which had arrived on elephants from below, were to advance along the main road, south of Selassie, as far as practicable, and cover the advance of the infantry, while the two mountain and naval rocket batteries at the foot of Selassie were to keep up a fire upon the gate of the fortress.

About 3 P.M. the batteries opened fire, and the shells from the mountain-guns fell thick upon the gateway and the adjoining defences. The Armstrong guns and mortars did not reach so good a position as that of the mountain batteries, as it was impracticable, on account of the nature of the ground, to advance them further than within 2,400 yards of the gate. Nevertheless, Captain Murray threw some shells with good effect; but Major Hills fired only a few rounds from his mortars, as he found that his position was not sufficiently far advanced to produce a fitting result. The fire of the artillery was concentrated against the gateway and the north end of the fort, which was crowded with the houses of the soldiers, avoiding as much as possible the higher parts of the interior, occupied by the Abyssinian prisoners and non-combatants. During the cannonade the enemy carefully concealed themselves from view, so that the place seemed almost deserted, although, when entered by the troops, it was found to be thronged with soldiers who had thrown away their arms, with released prisoners, and with the numerous voluntary and involuntary followers of Theodore's fortunes. Batteries open fire.

About 4 P.M. the advance to storm was ordered. The mountain batteries as long as possible kept up a fire over the heads of the troops advancing to the assault. The 33rd Regiment, led by Major Cooper, and keeping up a continuous fire from its skirmishers, soon surmounted the steep precipitous cliff which lay between it and the outer gate, notwithstanding the fire of the garrison from behind its first defensive line, which consisted of a wall surrounded by strong and thick barricades of thorny stakes, with a narrow stone gateway. On arriving at the gateway the progress of the assailants was arrested, for it was closed, and the engineers had not at hand the powder-bags with which to blow it in. The crowbars were, however, set to work, and the gate was broken down, when it was found that the body of the gateway, 15 feet deep, was filled up with large stones to a height of 12 feet, forming a serious obstacle. While the Sappers were engaged upon the gate, the garrison maintained a constant fire upon them through their loopholes, and during that time nine officers and men received wounds or contusions. Meanwhile some of the men of the 33rd, turning to the right, with Lieutenant Le Mesurier, R.E., found a point where the wall and fence were sufficiently low to be surmounted by means of a scaling-ladder. Here they entered and, taking the defenders of the gate in flank, drove them with heavy loss up a narrow path, which, twisting through rocks and huts, led to another narrow gateway some 70 yards higher up. Through this the leading men of the 33rd rushed, close behind the rearmost fugitives, and being quickly followed by the whole regiment, the summit of the fortress was rapidly gained, the standard of England was planted upon the African rock which had so long been the prison-home of British envoys, and Magdala was captured. The followers of Theodore immediately Advance to storm.

threw down their arms and prayed for quarter, which was of course granted, and no further loss of life occurred.

This fortress, although so easily carried, was very strong, even when its artificial defences were reached. Its position with reference to its outworks, Fahla and Selassie, might have been made almost impregnable. If Theodore had been properly supported by his soldiers, the British could not have escaped severe loss in its attack. As it was, however, his army had been so completely demoralized by the severity of the loss inflicted on them three days before, that the troops remaining faithful were few; and when they found that their unscientific defences gave them no opportunity to inflict loss on the assailants without exposing themselves to the rapid fire of the breech-loaders, they abandoned the contest as soon as their first line of defence was carried by the stormers.

Body of Theodore found.

Among the dead at the outer gateway were found several of Theodore's devoted chiefs, among others Ras Engeda, who had endeavoured to persuade him to massacre his European prisoners. The body of Theodore was found some way up the path which led from the second gateway to the palace. It appeared that Theodore, after re-entering Magdāla, when fired upon by Colonel Loch's detachment, had ordered the gateway to be filled up with stones, and had himself set the example in the work. When the British artillery opened he and his followers remained under cover, and few of the 300 well-armed men whom he had with him were injured, but Ras Engeda was killed by a shell just inside the gate. When Ras Engeda fell, Theodore himself hurried further up the fortress, divested himself of the gold-brocaded mantle which he had worn early in the day, and which he seemed to think made him a mark for the aim of the guns, and gave it to a servant. As soon as the storming party carried the outer gate he exclaimed to those near him, "Flee! I release you from your allegiance. As for me I "shall never fall into the hands of an enemy." Drawing his pistol he put it into his mouth, fired, and fell dead. His immediate followers fled across the *amba* and went out by the Kaffir-ber Gate; but were confronted by the Gallas, who tauntingly invited them to approach. Debarred from escape they crept into a cave; but hearing in the evening that the British did not kill their prisoners, they came in and surrendered themselves.* The numerous prisoners who were found in the fortress were relieved of their

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Statement of Theodore's servant.

* The following is the statement of Theodore's servant, Welder Gabre, translated by Captain Speedy, Amharic interpreter:—

"I am a native of Tigre, I joined Theodore at Gondar about five years ago. He had an army of 300,000 "soldiers then. I had been servant to Mr. Baroni, the British Agent at Massowah, who took me to Theodore. "I was appointed gun-bearer to the King. I have been following him ever since, through Shoa, the Wollo "country, Debra Tabor, Gojam, Damot, Gaffat, and Magdāla.

"Theodore treated me like a son.

"The reason he kept all the Europeans in his hands was that he was offended at no answer having been "given to a letter he had sent to Queen Victoria.

"Six months ago, before we left Debra Tabor, news reached us that the English army had come to Zula. No "proclamation of war had reached Theodore; who would have dared to give it to him? We heard they who had "landed bore arms, therefore we concluded they came for war. Theodore received the news but pretended to "know it not. He had no special reason for going to Magdāla when he did. He had gone to Debra Tabor to "fetch cannon which had been cast there.

"A chief called Wofla Sahila, one of the principal men of Debra Tabor, had deserted his army with a "number of soldiers. He threatened to burn Debra Tabor if he did not return, and fulfilled his threat.

"We were six months *en route* from Debra Tabor. The Jedda River was our most difficult obstacle, we "took three weeks to cross it; until we reached that river we had no certainty that you were coming.

"I did not have charge of the King's papers; Alika Engeda had; I was his domestic. When Theodore "heard you were coming, he broke out into boasting, and said that no Abyssinians could cope with him, and

PLAN & SECTIONS
OF THE
KOKIT BER GATEWAY
OF THE
MAGDĀLA AMBA

Lith. at the TOPL. DEPOT of the WAR OFFICE
COL. SIR H. JAMES, R.E. Director

chains; and the great body of Abyssinians, whose histories and condition it was at the time impossible to investigate, were collected in an open space in the centre of the

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" foreigners had come to do it! He hardly ever referred to the subject. He once said: 'Oh! that we may " ' meet those white donkeys, we shall show them what the sword and lance of Ethiopia can do—am I not " ' Kassa, who is called Theodore; who shall stand before me?'

Statement of Theodore's servant.

" As your army descended into the Bashilo, Theodore watched you from Selassie; with him were Mr. Waldmeier and Mr. Saalmüller, some Abyssinian chiefs, and myself.

" Theodore after looking through his telescope, said: 'Hurrah! there go the donkeys! They shall see our " ' prowess in battle.' The King then made even me retire to a distance while he talked to the two Europeans; " I do not know what passed; the King then went to his tent.

" The week before Masteeat had sent him three horses with a friendly message offering him her submis- " sion. The King had replied, 'Perhaps you are only fooling me; if you really mean it, come in, but whatever " ' you do, make no friendship with those white donkeys.'

" Two or three days afterwards Theodore descended into Arogie and plundered it. This cut short all " communication with Masteeat. Wurkait never had any authority.

" It was on Thursday that the above happened, and those of you whom Theodore saw that day were " your advanced pioneers.

" The same day the King issued fresh arms to his men and began to drink arrak. He spent the night " in his tent on Islamgie, but, before sleeping, he ordered three hundred and eighty prisoners, from all parts of " the country, to be brought down from the prison on Magdála; the guard brought them before him in the " evening. He liberated Ras Engeda, Chief of Agaumeder, Shum Salarva, of Tigré, and nearly a hundred " others. The remainder, chiefly Gallas, then raised a reproachful clamour that they too should be liberated. " The King jumped up in a rage, and being drunk at the time, he ordered them all to be put to death. He " commenced the work himself by cutting one of the bound women in two with his sword, then drawing his " pistol he shot two more. He then ordered me to shoot three others whom he pointed out; I did so! the " remainder were hurled alive over the precipice; any who showed signs of life afterwards were fired upon by " guards.

" No one counted the victims, we were all afraid.

" The King slept for three hours and spent much of the night in praying.

" I heard him in his prayers confess that he was drunk when he ordered the massacre, and he prayed that " it might not be laid to his charge. Before cock crow he assembled his army and ordered the road to be pre- " pared for the passage of his guns from Islamgie back to Fahla. He conveyed four large guns and four small " ones to Fahla, and as the enemy approached, he called upon his assembled soldiers to prepare for battle. He " gave the command of them to his constant friend for thirty years, the Fit Aurari Gebry, a man from his own " district.

" You yourselves saw how many soldiers there were. I think there were three thousand efficient men; " you seemed to us to be few, and we thought it was principally your treasure and its guard.

" About 500 or 600 of our soldiers were mounted, being the leaders of the soldiers.

" Theodore ordered his army to the attack, riding about in his boastful style. His army was proceeding " down, when suddenly the King recalled them and said it would be better to wait to see the enemy's tactics. " The men replied, they would rather go on and strip the soldiers of their gaudy clothing, to make cases for " their shields with.

" The King said, Be it so, I will cover you with my cannon. Abyssinians fired the cannon. Mr. Wald- " meier having, by the King's order, weighed out the powder and loaded the first gun. This gun was the one " called Teodros, and burst on the first discharge.

" Mr. Saalmüller and Waldmeier and the other artisans were ordered to retire after weighing out a charge " for each gun, which measure was followed throughout the engagement. I think they intentionally made the " charge too strong. When the first gun burst, the King reproached the Europeans.

" The British artillery then opened fire, and the rockets reached to the place where the King was, killing " a horse just behind the King.' Theodore said, 'What a terrible weapon! who can fight against it?' He " defended himself with his shield and watched the battle in silence.

" At one time we saw the skirmishers take ground to the rear, and we raised a shout of victory, and sent " off news to Magdála that we had conquered.

" As night came on the King sent a man to Fit Aurari Gebry for news. The messenger returned and said " he could not be found.

" He was sent back for accurate news, and afterwards reported he was killed. The King then named one " after the other of his Chiefs, and was told all were dead; the men who had escaped from the fight had gone " each to his own house on Islamgie; the night was spent by the King in sleeplessness. The following morn- " ing he sent for Dejach Alami, and I do not know what passed between them. Alami left him for the British

fortress, where they quickly threw up small huts for themselves, and remained until their final departure.

" Camp and brought back a letter, saying verbally that the British Commander demanded back his captive " countrymen.

" Ras Engeda, Wonebadé, Kompo, Dejach Aloee, Dejach Worke and others counselled the murder of the " captives, and resistance to the last. The King disapproved, saying that if that were done not an Abyssinian " would be spared.

" Basta Airto remarked that the British had come all this way for their countrymen who were of no use " to Abyssinia, while if they were killed terrible vengeance would be taken.

" The King said it was true, and ordered the restoration of the captives. I was not present during the " discussions which followed receipt of the letter of the British Chief.

" Belwaddad Asemie was sent by the King to free the prisoners and bring them to the King; while he was " away, the King became enraged, and drawing his double-barrelled pistol, cocked the left barrel, and placing " the finger, I conclude, on the trigger of the other barrel, put the muzzle in his mouth, and pulled, but the " pistol did not go off.

" Ras Engeda, one of his principal Chiefs, rushed and seized his hand, and a bullet was discharged from the " pistol as it was wrenched from his mouth. Theodore then covered his head with his cloth and laid down on the " ground, until it was reported that Mr. Rassam was coming. He then said to Mr. Rassam, 'I am going to " restore you to your friends, may you have a prosperous journey home.' The party of Mr. Rassam was then " dismissed.

" The next morning Theodore sent for his workmen, and said, 'You are going, too! I am sorry to part " 'with you, but you must go;' they went away.

" He then sent for his artillery from Fahla, and placed it in the market-place on Islamgie; after this was " done, he received intelligence from the head of his Commissariat that the cattle had not been admitted into the " British camp; on this, Theodore exclaimed, 'What, are they determined to quarrel with me? I cannot force " 'them to accept the cattle; send for the rest of my workmen.' When they came, the King ordered them to go " down to the British camp, leaving their women and baggage to follow. On seeing them go, Theodore said to " his Chiefs, 'Surely it is peace now, they have taken my power from me; surely it is peace.'

" When he received word that the British had refused to admit his cattle, Theodore was enraged and said, " 'These people having got what they desired, they now seek to kill me.' He then went to the Amba and spent " a restless night; at cock crow he rose, and standing outside, said, 'Warriors who love me, gird yourselves; " 'leave all behind, take nothing but arms, and follow me; the time has come to seek another home.'

" He went out of the fortress on the Kaffir Ber side, not by a regular gate, but one of the places in the " enceinte at which it was possible to descend. He was on foot, no one could have ridden down that place. " I was close to him as usual, and he was followed by four commanders of rank and two thousand men variously " armed; as he passed down he said, 'Where is the advanced guard?' He was told they were in rear; he " ordered them to the front. They refused, saying they would never flee before an enemy again, and would " rather seek death in Magdála.

" Theodore pondered for a little, and saying, Let it be so, re-ascended the mountain. We did not see any " Gallas, but heard their cries, and afterwards, when numbers of our garrison were deserting the mountain, we " saw them seized by Gallas. I followed Theodore into the fortress, and heard him tell all who were not pre- " pared to share his fortunes to the last, to provide for their own safety.

" Thousands thereupon left him and surrendered to the British. About noon Theodore, with about a hundred " picked men, leaving the citadel, proceeded towards the market-place on Islamgie, where his guns were. He " left Aja Negus Bahasee in charge of the fortress.

" Suddenly he was met by a handful of British cavalry. He then called for his horse, and having mounted " it, and ordered two of his guns to be dragged into Magdála, he began careering about, boasting of his prowess " and calling on a champion to come and meet him; not having any notice taken of him, and seeing the British " skirmishers steadily approach him, he rode back to where his men were still occupied in dragging the guns " up the hill.

" Several round shot fell near him from his own guns which had been turned on him by the British. " Still his men did not abandon the guns they were working at until a rifle bullet from the infantry killed one " of them.

" All then retired into the citadel, and closed the gates. The British artillery then opened with shell and " rockets. We remained under cover, and few were injured, but Ras Engeda was killed by a shell just inside " the gate; about one hundred soldiers were engaged in defending that gate; there were with Theodore " altogether about three hundred well-armed men; a crowd of women and children were hiding themselves " in every direction.

" When Ras Engeda fell, Theodore made no remark, but ascended further up the citadel. He said, 'Who " can fight with people who use such missiles?'

Early on the morning of the 13th, the main body of the Cavalry, under Colonel Graves, which had, as previously stated, moved from the Bashilo, threw out picquets to watch all the avenues leading from the fortress between the British camp at Arogie and the Kaffir-ber Gate, which was watched by the Gallas. The Cavalry picquets were within reach of each other, and were kept in constant communication by means of frequent patrols, so that before the assault the fortress was closely invested, and Theodore was deprived of all hope of escape. The next day the Cavalry returned to its former position on the Bashilo; it had not come in contact with the enemy, and suffered no casualties in men, but lost not a few horses from the cold to which it was subjected, and from the insufficiency of grain, under which it had long suffered during several forced marches. Disposition of Cavalry.

The whole of Theodore's guns were captured at the same time as his fortress. They consisted of— List of Ordnance captured.

3	brass	56-pounders,	smooth-bore.	
1	,,	18 ,,	,,	
4	,,	6 ,,	,,	Turkish.
4	,,	6 ,,	,,	
2	,,	6 ,,	,,	English (cast at Cossipore).
1	,,	6 ,,	,,	French.
5	,,	24-pounder howitzers.		Native and French.
4	,,	12 ,,	,,	
1	,,	3 ,,	,,	
4	iron	1 ,,	,,	
1	brass	20-inch	mortar	
1	,,	13 ,,	,,	
2	,,	10 ,,	,,	
5	,,	from 2½ to 6-in.	mortar.	

These guns, mortars, and howitzers were all found serviceable and supplied with ammunition, except one 56-pounder, which had burst on the 10th. This ordnance was much superior, both in number of pieces and in calibre, to the artillery of the British; had it not been deserted by its gunners it must have caused much loss to the assailants of Magdāla. Its existence proved the wisdom of the resolution of the British Commander to carry forward his Armstrong guns and mortars to the very gate.

The number of rank and file actually engaged at the assault on Magdāla on the 13th April, was as follows:—*

" When the storming party had taken the outer gate, he exclaimed to those near him, 'Flee; I release you " 'from your allegiance; as for me I shall never fall into the hands of an enemy.' Drawing his pistol, he put " it to his mouth, fired, and fell dead. I and fifteen of his favourite gun-bearers then fled by the Kaffir-ber Gate. " We were confronted by the Gallas, who called out tauntingly, 'Come! my beloved, come!'

" We fired upon the Gallas in reply; this attracted the attention of the British soldiers on the rock above, " who opened a fire on us and others similarly situated. This made us creep into a cave. In the evening, we " heard from some of our countrymen, that we would not be killed if we surrendered to the British, which we " did.

" Next day I visited the remains of the late King, which Mr. Rassam showed me; I at once recognized the " body of Theodore.

" Theodore shot himself before a man of the storming party had forced the second or inner gate of the " citadel; no soldier was within sight at the time.

" On the morning of that day he had dressed himself in a gold brocaded mantle, but when the fire had " become heavy he divested himself of it and gave it to a servant."

* Return furnished by the Assistant Adjutant-General 1st Division.

Number of rank and file actually present at the assault on Magdála.

Corps.	Rank and File.
3rd Dragoon Guards	173
3rd Light Cavalry	146
12th Bengal Cavalry	50
Bombay Sappers and Miners	283
Madras " "	74
G Battery 14th Brigade Royal Artillery	91
A " 21st " "	113
B " 21st " "	155
5th " 25th " " (Mortars)	25
4th King's Own Regiment	526
33rd Regiment	641
45th "	314
10th Native Infantry	199
27th Beloochees	554
10th Company Royal Engineers	25
Naval Brigade	82
	3,460

In addition to these troops, the 3rd Regiment Sind Horse were at the Bashilo, and the Punjab Pioneers and two companies of the 10th Regiment N.I. guarded the Arogie camp.

British casualties.

The British casualties at the storming of Magdála were not serious. Major Pritchard, R.E., received two slight contusions by splinters of stones; Corporal Hobson, a splintered wound of right leg; Sapper Dennis, a slight splintered wound of forehead; Serjeant Jones and Private Lake, 33rd Regiment, were severely hit, each through the right leg; Privates Hayne, Daly, and Hickson, of the same regiment, received slight gunshot or spear-wounds; one man of the Madras Sappers and one of the 3rd Light Cavalry, also received severe gunshot wounds. Captain Elliot, of the Madras Sappers; Cornet Dalrymple, of the 19th Hussars, attached to the Madras Sappers; Serjeant Fielding, of the Madras Sappers; Serjeant Dean, R.E., and Lieutenant Morgan, R.E., were also hurt near the gateway, but were not returned as wounded.*

On the date of the capture of Magdála the disposition of the army throughout Africa was as follows:—† (See Map in separate cover.)

Disposition of the British troops in Africa on the 13th April.

Zula.—10th Bengal Cavalry, 1 troop; H Company Madras Sappers; 26th Regiment, (Cameronians), 3 companies; Wing 18th Regiment Native Infantry.

Kumayli. — G Company Madras Sappers; 2nd Grenadier Regiment Native Infantry; Wing 18th Regiment Native Infantry.

Suru.—Detachment 5th Battery 25th Brigade Royal Artillery, 6 guns; 26th Regiment (Cameronians), 2 companies; 21st Punjab Native Infantry, 1 company.

Undul Well.—26th Regiment (Cameronians), 2 companies; 21st Punjab Native Infantry, 1 company.

Raha Gedi.—21st Punjab Native Infantry, 2 companies.

Senafé.—10th Bengal Cavalry, 1 troop; 1 Company Native Artillery, 4 guns; 26th Regiment (Cameronians), 3 companies; 10th Regiment Native Infantry, 4 companies; 21st Regiment Bombay Native Infantry, 1 company; 21st Punjab Native Infantry, 4 companies.

* A complete nominal roll of men wounded will be found in Sir Robert Napier's despatches, see pages 473 and 477, Chapter XXXVIII.

† From a return furnished by the Quartermaster-General's Department.

Adigrat.—10th Bengal Cavalry, 1 troop; Detachment G Battery 14th Brigade, Royal Artillery, 2 guns; 25th Regiment Native Light Infantry, 5 companies.

Agula.—12th Bengal Cavalry, 1 troop.

Antalo.—3rd Bombay Light Cavalry, 1 troop; 10th Bengal Cavalry, 1 troop; 12th Bengal Cavalry, 1 troop; Bombay Sappers and Miners, 1st Company; 45th Regiment, 4 companies; 3rd Regiment Native Infantry, 4 companies; 25th Regiment Native Light Infantry, 3 companies.

Ashangi.—3rd Bombay Light Cavalry, 1 troop; Head-Quarter Wing 10th Bengal Cavalry, 3 troops; 12th Bengal Cavalry, 1 troop.

Dildi.—12th Bengal Cavalry, 1 troop.

Santara.—Sind Horse, 1 troop.

Sindi.—Sind Horse, 1 troop.

Bashilo River.—Sind Horse, 4 troops. 12th Bengal Cavalry, 1 troop; Bombay Sappers and Miners, 2nd Company.

Magdāla.—3rd Dragoon Guards, 3 troops; 3rd Bombay Light Cavalry, 4 troops; 12th Bengal Cavalry, 1 troop; G Battery 14th Brigade Royal Artillery, 4 guns; A Battery 21st Brigade Royal Artillery, 6 guns; B Battery 21st Brigade, Royal Artillery, 6 guns; Detachment 5th Battery, 5th Brigade Royal Artillery, with two 8-inch mortars; Naval Brigade 12 rocket tubes; 10th Company Royal Engineers; K Company Madras Sappers; Bombay Sappers and Miners, 3rd and 4th companies; 4th King's Own Regiment; 33rd Regiment; 45th Regiment, 6 companies; Head Quarter Wing 10th Regiment Native Infantry; 23rd Punjab Pioneers; 27th Regiment Native Infantry Beloochees.

Of these troops the 3rd Dragoon Guards had landed at Zula numbering 204 men of all ranks, 224 horses, and 257 Native followers. Before Magdāla they numbered 173 of all ranks, 171 horses, and 78 followers.

Special services of each regiment.

Their kits had been reduced on the march at Senafé, Adigrat, Antalo, and Dildi. The men, previous to embarkation for Abyssinia, were provided with the Snider breech-loading carbine. Each man had two suits of Khakee clothing and a red serge patrol jacket; the latter was issued gratis, and found to be most useful. A blanket and waterproof sheet, and also a woollen jersey were issued to each man on arriving in Abyssinia.

3rd Dragoon Guards, Strength of men and followers, on landing, and before Magdāla.

At Dildi the baggage of this regiment was finally reduced, and each man from Dildi carried on his saddle his cape in front, his cloak doubled and strapped on like a valise, with waterproof sheet over it, water bottles, mess tins, head and heel ropes.

Clothing.

The wing, 3rd Dragoon Guards, marched from Zula to Magdāla in 29 days, including three halts, on account of the baggage animals.

Native Cavalry, Sind Horse, &c.

The strength of the 3rd Bombay Cavalry, 3rd Sind Horse, and 10th and 12th Bengal Cavalry on landing has already been shown,* as also the horse casualties in the 3rd Bombay Cavalry by the epidemic.† All the Silladar Cavalry regiments‡ were, in addition to other duties, employed on postal work, and performed excellent service throughout the campaign. Owing to the nature of the country and want of forage, the horses suffered much. None, however, so much as the Sind Horse. From the arduous duties performed by this regiment, combined with a certain amount of inferiority in their horses, many of the troopers had become dismounted by the time it arrived at the Bashilo.

* For strength 3rd Cavalry, see page 328, Chapter IX. For 3rd Sind Horse, and 10th Bengal Cavalry, see pages 14 and 15, Chapter XIV. For strength of Bengal Cavalry, on embarkation in India, see page 222, Chapter VII.

† See page 346, Chapter X.

‡ For the organization of Cavalry on the Silladar system, see page 115, Chapter V, and page 183, Chapter VI.

This regiment occupied the honourable position of an advance-guard to the Army throughout the march on Magdāla, but had to pay the penalty of making its way through a difficult country before the roads were improved, while at one portion of the campaign the whole postal duties between Senafe and Antalo were performed by it, and it was divided into such numerous detachments that British officers were not available for their superintendence, while the Native officers did not always succeed in getting their indents complied with by the Commissariat. The result of these various causes was a great mortality. The regiment eventually landed in India with only 152 horses.

Naval Brigade.

The Naval Brigade landed at Zula on the 25th January, and encamped on the plain. Commander Fellowes, who was in command, commenced organizing them, and as soon as mules could be supplied, lost no opportunity of drilling the men in batteries, exercising the firing of rockets and the performance of field evolutions.

The men rapidly acquired a knowledge of the drill and the management of mules, and the brigade was reported ready to march to the front when the rocket tubes were supplied. On the 29th February, it proceeded to Antalo to join the advanced division.

Strength.

It then consisted of 100 officers and men (Europeans), two farriers, 13 grass-cutters, three water carriers, six bearers for sick, one sweeper for hospital, 88 battery mules, 54 baggage and provision mules, 11 officers' horses, and three bullocks for carrying water; and it carried five days' rations for men and animals.

The Naval Brigade was at first attached to the 2nd Brigade 1st Division, and marched from Antalo on the 17th March in company with the B Mountain Battery of Artillery, the 33rd Regiment, and 23rd Punjab Pioneers, and a detachment of the Sind Horse. After incessant and somewhat harassing marches, it arrived at Lat on the 23rd March and joined the head-quarters of the 1st Division, with which it marched till it joined the head-quarters of the Force at Santara on the 30th of March.

On the 31st March, it moved with the head-quarters of the Force and the 1st Brigade on Gahso, and thence on Abdikum, Sindi, and across the Jedda on to the Talanta Plain.

On the 10th April, it marched as already described with the 1st Brigade at 4.30 A.M. on Magdāla by the King's Road down the steep and precipitous south bank of the Bashilo, and across the river. After crossing the Bashilo, it with the A 21 Battery Royal Artillery was ordered to proceed by the King's Road up the Arogie Pass, the Naval Brigade leading. Shortly after ascending the pass, the action of Arogie, in which it acted a prominent part, commenced.

Rocket Tubes.

The rocket tubes were easily handled and were brought into action in a very short time, and the Naval Brigade were enabled to return the first shot; after this the fire was kept up with rapidity, until the enemy were driven back, and the rocket batteries were taken down on the plain to clear out parties of Theodore's troops who were firing from behind bushes. As much rain had fallen during the afternoon and evening, the officers and men of the Naval Brigade were, in common with the rest of the force, wet through. There were no tents, and a vigilant look-out had to be maintained. On the night of the 13th the Naval Brigade bivouacked in Magdāla and returned to camp on the morning of the next day.

On the 17th April, it re-crossed the Bashilo, ascended the Talanta Plain, and on the 22nd April crossed the Jedda, and commenced the return march to Zula. The marching of the Naval Brigade was excellent throughout; no cases occurred of men falling out, although their boots were frequently worn through; men who were sick even performed long marches. The strictest discipline was maintained throughout;

in every point the sailors proved excellent soldiers, and a cordial and even warm feeling was shown by all ranks in the army towards the Naval Brigade.

The movements of the G Battery 14th Brigade Royal Artillery, and of the 8-inch mortars with the elephants, have been already described.* G. Battery, 14th Brigade, R.A.

The strength of the A Battery Mountain Train Royal Artillery on landing at Zula, was—1 first captain, 1 second Captain, 3 Lieutenants, 1 Staff Serjeant, 8 Serjeants, 1 Armstrong armourer, 6 corporals, 6 bombardiers, 1 collar maker, 1 wheeler, 2 trumpeters, 62 gunners, 2 Native farriers, 2 filemen, 2 hammermen, 3 carpenters, 13 store lascars, 3 tent lascars, 7 bheesties, 20 muleteers, 12 grass cutters, 3 sweepers, and 1 bildar. A Battery, 21st Brigade, R.A.

The Hospital establishment consisted of—1 Assistant Surgeon, 1 apothecary, 1 compounder, 1 cook, 1 ward boy, and 1 sweeper. Strength on landing.

The strength of the battery before Magdala was—1 first Captain, 1 second Captain, 3 Lieutenants, 1 Assistant Surgeon, 2 Staff Serjeants, 7 Sergeants, 1 Armstrong armourer, 6 corporals, 6 bombardiers, 1 collar maker, 1 wheeler, 2 shoeing smith, 2 trumpeters, 57 gunners, 27 privates 4th King's Own Regiment (employed as drivers), 1 serjeant and 5 privates, 33rd Regiment (employed as drivers), 13 Native store lascars, 3 bheesties, 34 muleteers, 29 grass cutters, 25 dhooly bearers, 4 cooks, and 1 European apothecary. Strength before Magdala.

Each European was armed with a Snider carbine and sword and 20 rounds of ammunition, and was in the possession of a full Indian kit, with the addition of a pair of gaiters and a water-filter. Each Native follower was supplied at Zula with the following articles —1 pair of boots, 2 pair of socks, 2 flannel shirts, 1 night cap, 1 blanket, 1 pair trousers, 1 great-coat. Arms, ammunition, and clothing. Clothing of Followers.

Each European present before Magdala was in possession of—1 serge coat, 1 pair cloth trousers, 1 grey shirt, 1 pair wollen socks, 1 pair boots, 1 blanket, 1 great-coat, and 1 waterproof sheet; and each Native follower had 1 pair boots, 1 pair socks, 1 flannel shirt, 1 pair trousers, 1 great-coat, 1 night cap, and 1 blanket. Clothing before Magdala.

The strength of the B Battery was almost similar to the above. The equipments of both these mountain batteries have already been fully described.†

On the 27th January, the A Battery, under Lieutenant-Colonel Penn, marched from Zula, reaching Senafe on the 31st January, Adigrat on the 5th February, and Antalo on the 20th February. The excellent manner in which the march was so far completed left nothing to be desired. Antalo was reached without a casualty. No load was even displaced on the road, there were no galls, no sore backs, no sickness. From Adigrat to Antalo the battery was attached to the advance brigade, the road was always hilly and rough, had been only partially made in many places, and could only have been traversed with great difficulty by animals less perfectly laden. No difficulty, however, was found which was not overcome by the energy and intelligence of officers and men. March of the A battery.

At Antalo, a range was obtained with the double shell, with 4 oz. cartridges, to 1,450 yards, without apparent distress to gun or carriage, and a few of these cartridges were made up, which were afterwards used with good effect. Range.

Wood tangent scales were also made for use instead of the quadrant when firing at high angles. These were only roughly constructed by the battery artificers, but were found useful. Scales.

Marching from Antalo on the 12th March, the A battery accompanied the advance throughout—the almost insuperable difficulties of the road were surmounted without

* See page 13, Chapter XIV; page 40, Chapter XVIII; and page 98, Chapter XIX.
† See pages 61, 362, Chapters IV and X.

accident or loss—the great ravines of the Takazze, the Jedda, and the Bashilo, were crossed without casualty; that of the Jedda with the advance guard of the army, over a track which might well have been considered impassable, but the only damage was a loss of a foresight broken in the fall of a gun, with the mule which carried it, over a cliff.

Ammunition expended in action.

Arriving before Magdâla on the 10th April, this battery found itself in action with the enemy. On this occasion 19 rounds per gun were fired, at ranges varying from 450 to 1,800 yards, with Shrapnel and common shell; the practice was excellent, and caused heavy loss to the enemy. The fuzes acted well, the ranges were changed with ease, and the changes of position of the battery were made with rapidity.

B battery, 21st brigade, R.A.

The B Battery, under command of Captain Twiss, did not leave Zula until the end of February, and in the mean time the mules had been almost constantly engaged in heavy transport duty between Zula and Senafè. Leaving at so late a date, the battery was called upon to march rapidly to the front, and it reached Antalo without a halt—from Antalo to the front the difficult marching did not afford any opportunity for recruiting, and the mules were not in such high condition, or so fine in appearance as those of the A Battery; they had, however, carried their loads well, and no accident involving loss of stores had occurred. B Battery did not cross the Bashilo until the afternoon of the 10th April, and was not, therefore, engaged on that day, but having been brought to the front on the following morning, both batteries were together on the 13th April, at the capture of the fortress of Magdâla. On this occasion 18 or 20 rounds per gun were fired, at ranges from 1,300 to 1,500 yards, common and double shell only being issued; 15 rounds of the latter were fired with 4 oz. charges, at a range of 1,400 yards, and carried well to that distance; the common shell were used in shelling the defences of the gate of Magdâla, and the precision of the fire could not be excelled. The shells were observed to burst regularly and without failure. No difficulty was experienced in loading, or in boxing and fixing the fuzes: and that the intended effect was produced was manifest from the fact that the defenders of the gate were observed to retreat in large numbers some time before the advance of the assaulting party was ordered.

Its march.

Ammunition expended before Magdâla.

Fuzes.

The storming party having secured an entrance, one battery was advanced, and one gun, with a small supply of ammunition, was carried by the gunners up the steep ascent, through the narrow entrance, and brought into action within the fort. No further occasion, however, arose for its services. On the 10th and 13th April, 25 Hale's rockets were fired, they acted well, and were considered in all respects good and efficient.

Action of fuzes in ricochet.

Having reached Ashangi, on the return march, a few rounds were fired from the mountain guns over the lake, with a view to observe the action of the fuzes in ricochet, and to afford foreign officers and others an opportunity of witnessing the effect of the bursting of the different classes of shells. The result was eminently satisfactory, confirming the perfect serviceability of the fuzes, establishing the fact that they are not extinguished on striking the water, and demonstrating what a formidable projectile can be thrown from a miniature piece of ordnance, with an insignificant charge of powder.

10th Company, Royal Engineers.

The 10th Company Royal Engineers was, on its organization, divided into—(1) Telegraphists, under Lieutenants St. John and Puzey, R.E.; (2) Signallers, under (the late) Lieutenant Morgan; (3) Well Borers, under Lieutenant Le Messurier, R.E.; and (4) Photographers, under the Quartermaster-General's Department. *

Telegraphists.

The men of the 10th Company Royal Engineers were, as a rule, kept to the particular work they were sent out from England to perform. The Telegraphists were

* For strength, organization, and complete equipment, see page 136, Chapter XXII.

employed between Zula and Antalo only, under the orders of Lieutenant Puzey, R.E., and under the general superintendence of Lieutenant St. John, R.E.*

The Signallers made themselves useful to the Army the whole way from Senafè to Magdàla, and their services were more especially valuable while the Army was crossing the ravines of the Takazze, the Jedda, and the Bashilo, and on the advance on Magdàla.* Signallers.

The Well Sinkers made themselves generally useful on the line of march from Kumayli to Magdàla, proving the efficacy of the American pumps as applicable to the line of march of an army.† The operations of the men were judiciously directed by Lieutenant Le Messurier, R.E. Well-sinkers.

The Photographers completed a series of views from Zula to Magdàla, illustrating all points of interest on the line of march of the Army.‡ It is to be regretted that rather more professional and artistic knowledge was not brought to bear on this subject. Some beautiful effects of light and shade were lost, owing to the views not having been taken at the proper time of day. Photographers.

The Madras Sappers were under the command of Major H. N. D. Prendergast, V.C., R.E., and consisted of the G, H, and K Companies.§ Madras Sappers.

The G Company was posted at Zula and Kumayli during the whole campaign. The services performed by this company on the public works at Zula, on the railway, and on the Kumayli waterworks were excellent. The sepoys excavated a well on the railway line, 85 feet in depth, without lining of any kind, and proved themselves skilful workmen.

The H Company was employed during the whole campaign at Zula, and did much good service in a bad climate.

The K Company commenced work in the Senafè Pass, after a short stay at Zula, and improved the track route between Antalo and Magdàla, rendering it suitable for laden mules and elephants, and was present at the action of Arogie and taking of Magdàla.

The Bombay Sappers and Miners were under under the command of Captain McDonnell, R.E, and consisted of Nos. 1, 2, 3, and 4 Companies.§ Bombay Sappers.

No. 1 Company arrived at Zula in October, from Aden. After a short time, it was sent to the Suru Defile, and worked on the road in the passes till December, 1867, when it marched to Senafè and worked on that ghaut till the end of January; it was then moved on to Adigrat, working on the road between Senafè and that place, more particularly on the Karsaba Ghaut, for which piece of road great credit was due to the men. The company then proceeded to Antalo, and was employed in constructing the telegraph, and returned to the Suru Pass in time to repair the damage done during the month of May, remaining in the Pass on duty till all the troops had cleared out.

No. 2 Company arrived at Zula, with the Head-Quarters of the Bombay Sappers, early in December, and, after a short stay on the coast, worked on the Senafè Pass, and principally on the Suru Defile; work for which this company deserves great praise. The company was then pushed on to Magdàla, assisting in the road work, and was present in the action of the 10th and capture of Magdàla.

No. 3 Company worked for *two months at Zula on the* stone pier; the men were, on an average, employed there eight hours a-day, it was then marched up into the Pass,

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* For organization of 10th Company Royal Engineers, see Chapter XXII.
† For detail and description, see Chapter XXX.
‡ For detail and description, see Chapter XXXIV.
§ See Commanding Engineer's Report, Chapter XXXIII.

worked on the Senafè Ghaut, on the road between Senafè and Adigrat, and between Adigrat and Antalo; assisted in road work between Antalo and Magdāla, and was present in the action of the 10th April and capture of Magdāla on the 13th.

No. 4 Company worked two months at Zula, on the stone pier, 8 hours a-day; it was then employed at Lower Suru, and subsequently on the Senafè Ghaut. Assisted in making the road between Senafè and Adigrat, and between Adigrat and Antalo; was employed generally in road-making between Antalo and Magdāla, and was present in the action of the 10th April and capture of Magdāla.

Arms, clothing and equipment of each soldier (infantry) on landing at Zula.

The arms, clothing, necessaries, &c., in possession of each British soldier (Infantry) on landing in Africa, were as follows:—1 Snider rifle and bayonet, 1 set accoutrements (old pattern), 1 waterproof sheet, 1 bed complete, 1 zinc water bottle, 1 haversack, 1 pocket filter, 1 cloth tunic, 1 cloth trousers, 1 serge tunic, 1 serge trousers, 2 khakee tunics, 2 khakee trousers, 1 helmet and puggerie, 1 lb. soap, 3 pairs socks, 2 pairs stockings, 1 holdall (complete), 4 flannel shirts, 3 towels, 3 pairs boots, 1 pair leggings, 2 flannel belts, 1 set shoe brushes, 1 cloth brush, 1 brass brush, 1 pair mitts, 1 great-coat, 20 rounds ball ammunition, and 1 forage cap.

Ditto before Magdāla.

The clothing, arms, &c., in charge of each man before Magdāla (carried by soldier), were as follows:—1 helmet and puggerie, 1 suit khakee, 2 pairs socks (1 in haversack), 1 towel (in haversack), 1 haversack, 1 water-bottle, 1 pair boots, 1 flannel shirt, 1 Snider rifle and bayonet, 1 set belts, 60 rounds ball ammunition, ½ lb. soap, 1 great-coat, 1 blanket, and 1 waterproof sheet. All rolled in the great-coat, and worn pioneer fashion, over the shoulder. One mule was allowed to every 25 men, to carry a serge tunic and a pair of serge trousers for each man.

4th King's Own Royal Regiment.

The 4th King's Own Royal Regiment has been repeatedly mentioned, in the preceding chapters. The strength of the corps on landing in Abyssinia was—2 Majors (1 in command), 9 Captains, 11 Lieutenants, 7 Ensigns, 1 Paymaster, 1 Quartermaster, 1 Surgeon, 2 Assistant Surgeons, 42 serjeants, 37 corporals, 19 drummers, 667 privates, and 6 horses, including 2 serjeants and 53 rank and file left behind at Bombay as unfit, but subsequently passed by a Medical Board, and sent after the regiment. Most of these men, however, proved quite unfit for the campaign, and never reached Magdāla.

Strength on landing.

Before Magdāla.

The strength of the corps before Magdāla was—2 Majors (1 in command) 8 Captains, 9 Lieutenants, 4 Ensigns, 1 Paymaster, 1 Quartermaster, 2 Assistant Surgeons, 33 serjeants, 23 corporals, 14 drummers, 401 privates, and 6 horses, and 1 serjeant, 3 corporals, and 55 privates, attached to the Artillery.

Native Followers on landing.

The Native followers who landed in Abyssinia with the regiment numbered 438. Of this number 229 were hospital servants, including 1 shop servant, 5 ward servants, 2 cooks, 1 leechman, 4 sweepers, 2 store servants, 2 dhobies, 1 tailor, 5 bheesties, and 206 dhooly bearers. The following were also attached to the regiment:—18 lascars, 20 puckaulie bheesties, 40 hand bheesties, 30 sweepers, 38 servants, 50 cooks, 10 dhobies, 2 peons, and 1 chowdry.

Before Magdāla.

The Native followers before Magdāla were 54 hospital servants (1 shop servant, 4 ward servants, 1 cook, 1 leechman, 3 sweepers, 1 store servant, 1 dhobie, 1 tailor, 4 bheesties, and 37 dhooly bearers), also 10 puckaulie bheesties, 20 cooks, 20 hand bheesties, and 13 servants.

Extra duties performed 4th King's Own regiment.

The regiment landed at Zula on the 3rd January, and was employed at once on heavy fatigue duty,—landing and moving stores, and assisting in laying the railway to Kumayli until their departure for Senafè. On the 10th January, 65 non-commissioned officers and men were permanently attached, as assistant Artillerymen, to the two mountain batteries. On the 26th and 31st January, and 6th February, the battalion marched,

in three detachments, on Senafé, in all 610 strong, after leaving platelayers and other workmen behind for service at Zula. Whilst at Senafé, the battalion was practised in route marching with packs; and soldiers' gardens were commenced for the purpose of growing vegetables, which would have proved of much use in case of a prolonged stay in the country. On the 8th and 13th February, the battalion (569 strong) marched in detachments on Adigrat, with knapsacks, a careful selection having been made of only such men as were likely to stand great fatigue and privation. The battalion was employed, on the 16th and 17th February, in throwing up entrenchments at Adigrat. On the 18th February they marched on Adabaga, which they reached on the 19th; and had heavy work in hauling the Armstrong guns up the hills. On the 25th they proceeded, with the Head-Quarters of the Force, to receive Prince Kassai of Tigré, and the next day continued the march to Antalo. At Dongola, the men were ordered to discontinue their packs. They left Antalo on the 12th March, for the front. At Mashik, on account of the road being reported bad, the whole regiment was broken up into baggage-guards, for their own baggage, and that of the Artillery, Cavalry, Commissariat, and Engineers; each man having charge of one or more mules. This system, which was often repeated, answered, as stated before, very well; but the work fell heavily on the men, and especially on those in charge of broken-down mules, who frequently did not reach camp for more than twelve hours after the Head-Quarters of their battalion, and without having had any food; yet there was hardly a case of a man of the 4th Regiment abandoning his charge, under any circumstances.

From Bulago to Lake Ashangi, and from thence to Lat, the 4th Regiment had to make the road practicable for elephants, whenever necessary. On the evening of the 25th March, when within 3 miles of Dildi, the regiment was transferred to the advanced brigade, in place of the 33rd Regiment, and started for Wandach next morning, as soon as the baggage-guard, which came in after midnight, had rested. This march has been described.* The only way in which the men succeeded in getting their baggage over the steepest and most slippery part of the ascent was by strewing the road with heather for the mules to obtain a footing. On the march from Muja, after crossing the Takazze, two companies were ordered forward with the Punjab Pioneers, to repair the road up the opposite hills to Santara, and make it practicable for the baggage animals. On the 3rd April, at Sindi, two companies, with the A Battery 21st Brigade, Royal Artillery, were detached in advance to occupy the heights beyond the Jedda River; and on the 4th April the whole of the battalion encamped on Talanta Plain, with the rest of the First Brigade.

Duties before Magdála.

Orders were received on the 9th to reconnoitre towards Magdála, and the regiment started at daybreak next day, the men taking their breakfasts (cooked) with them; and after crossing the Bashilo, the water of which was thick with mud and quite unfit for drinking, was ordered at once to ascend the heights to the right of the road. At the first halting-place the men were halted for breakfast, but they were suffering so much from thirst they could scarcely swallow. It was not till after four o'clock in the evening that the regiment reached Afeego, when the action of Arogie, which has been described elsewhere, took place. On 13th April it was present before Magdála, and followed, in reserve, into the fortress. On 15th April the 4th Regiment relieved the 33rd in Magdála, and remained there till the evening of the 17th, when the men were employed in heavy fatigue duty, removing all useful stores, corn, &c., from the

* See page 18, Chapter. XV.

fortress to the foot of the hill, destroying all the arms at the Arsenal, and improving the road. On the 17th the regiment evacuated the place, and rejoined the main body of the Force. It is probable that no other regiment had the same amount of harassing work as the 4th during the whole of the operations before Magdâla, and great credit is due to the men for the cheerful manner in which they performed it.

33rd Regiment.

The 33rd Regiment was the first body of British soldiers of the Force that landed at Zula. The extraordinary duties thrown on this regiment, as far as Antalo, have been already shown.* Its strength, on landing at Zula, was 27 officers and 819 non-commissioned officers and rank and file; and its followers numbered 20 bheesties, 14 dhobies, 23 cooks, 1 chowdry, 2 peons, 28 sweepers, 40 officers' servants, 4 officers' mess servants, and 28 lascars; as well as those attached to Hospital Department, consisting of 3 warrant officers, 2 apprentices, 35 followers, and 147 dhooly-bearers.

Strength on landing.

Before Magdâla.

The strength of the regiment, with the number and description of followers before Magdâla, was 31 officers, 2 warrant officers, 694 non-commissioned officers and rank and file, 20 cooks, 11 puckaulies, 17 bheesties, 7 officers' servants, 1 apprentice, 24 followers, and 43 dhooly-bearers.

At Dildi, working parties were sent out from the 33rd Regiment, making the road to the river, and also to the front; and strong parties were sent to assist the G Battery 14th Brigade, Royal Artillery, up and down the Jedda and Bashilo Rivers, being employed for many hours on this duty. On the night of the 10th April, when bivouacking in the bed of the Bashilo, this regiment received a sudden order to leave its tents (which had not then come up), ammunition, and stores, and to march to the front with every available man. The regiment bivouacked that night on the Arogie Hill, and the whole regiment was either marching or on outlying picquet for four consecutive nights. On the morning of the 13th the brigade advanced on Magdâla; and the 33rd, (having ascended the Islamgie Hill), stormed that fortress, as already described.

26th Regiment.

The 26th and 45th Foot were similarly equipped to the 4th and 33rd Regiments. The former corps arrived late in Africa, and did not advance beyond Senafè. The 45th did good work at Zula and Kumayli; and six companies made a severe forced march, and joined the Head-Quarters of the Force on the Talanta plateau.

45th Regiment.

Four companies of the 45th Regiment were for some time encamped with the wings of the 2nd Grenadier and 18th Regiments Native Infantry, on the plain between Zula and Kumayli. These companies had been for about six weeks employed in laying rails and sleepers, and in making the road for the rail. Orders were issued to send these companies of the 45th to the front, but other labour not being procurable, and their services being urgently required for the railroad, they were detained; they left for the front on the 20th March.

26th Regiment.

The 26th Cameronians landed on the 2nd of April, and were sent up to Senafè in detachments. While at Zula and in the Pass they were employed in fatigue duties—embanking the pier, on the railroad embankment, and carrying despatches and stores. Their services were of great value at a time when other labour was not procurable.

10th Regiment, N.I.

The 10th Regiment Native Infantry arrived with the Advanced Brigade under Colonel Field; its proceedings, and the excellent work performed by it, are described in Chapters VIII. and IX. It then moved up to Senafè, where it remained till the end of January 1868, and was daily at work in clearing away jungle, making roads, and improving the water supply by digging wells and a reservoir. Under the

* See page 7, Chapter XIII.

direction of Major Pierce huts were constructed for more than 1,000 muleteers, the whole of the wood having been cut and brought from the hills by the Sepoys of this regiment. Commissariat shelter was also built in like manner by them, and gangs of men were likewise employed in cutting grass for the mules. The country being much impoverished, the Sepoys suffered from the want of vegetables and of the condiments they are accustomed to take with their food; but no complaints, from the beginning to the end of the campaign, were ever heard. The guard duties were necessarily very severe, as it was impossible to repose confidence in the natives of the country; and the camp therefore had to be protected as carefully as if surrounded by enemies. About the middle of January, two companies of the right wing, under Major Pierce, joined a Field Pioneer detachment to open the road to Adigrat; and two other companies afterwards were in like manner employed in assisting to make the road from that place to Antalo. The remainder of the right wing marched from Senafè, for Adigrat and Antalo, on the 31st January; and the Sepoys were often employed with the British soldiers in assisting the Armstrong guns over the hilly and difficult ground. The left wing was detained at Senafè, under Major James, and while there was employed in various ways; it also furnished detachments to guard Commissariat stores at several of the posts *en route* to Antalo, where the right wing of the regiment remained for a fortnight, the Sepoys being daily employed in entrenching that position. It then, by forced marches (leaving the weakly men behind), joined the 3rd or Working Brigade at Lat, under command of Brigadier-General Field, and assisted in escorting the elephants with the Armstrong guns, and in making the road to Santara, where the Third Brigade was amalgamated with the First and Second Brigades. The Head-Quarter wing of the regiment, then under command of Colonel Field, joined the Second Brigade, and was present with that brigade through all the remaining operations of the Force.

Construct huts for followers.

Guard duties.

The 27th Bombay N.I. (or 1st Belooch Regiment) landed at Zula with 9 European and 14 native officers, 33 havildars (serjeants), 16 drummers and fifers, and 623 rank and file. Its marching establishment of followers consisted of 8 bheesties (water carriers), 2 hospital assistants, 77 public and 67 private followers. Before Magdāla the strength of the regiment was 9 Europeans, 14 native officers, 32 havildars, 15 drummers and fifers, 519 rank and file, 8 bheesties, 2 hospital assistants, and 49 public followers. The first act of the regiment was to land the whole of its baggage, ammunition, tents, &c., carrying the whole, and pitching the camp three-fourths of a mile from the pier, without assistance of any kind. The regiment then proceeded to Rahagedi, to work in the Suru Pass, and aided by the Bombay Sappers and a company of the Marine Battalion completed the road through the Pass. Early in February, it was told off to the Advanced Brigade; the right wing only, with the Head-Quarters, proceeding with the advance, the left wing being detained at Adigrat. At a later period, the left wing, under Captain Castell, joined Head-Quarters before Magdāla, a few hours too late for the Arogie action, after a forced march of 300 miles, made under great difficulties as regards mules, &c. (the men carrying their own kit throughout), a march unparalleled during the campaign.

Belooch Regiment.

Strength on landing.

Before Magdāla.

Duties in Suru Pass.

Extraordinary forced march.

The Belooch regiment was the only complete regiment of Bombay Native Infantry before Magdāla. The following statement shows the kit, necessaries, clothing, &c., with each man on landing at Zula, and what he had before Magdāla;—

Lists of clothing, necessaries, &c., at Zula and before Magdala.

On Landing at Zula.	Weight. lbs.	Weight. ozs.	Before Magdala.	Weight. lbs.	Weight. ozs.
1 Great-coat	4	11	1 Tunic	1	14
1 Razai or quilt	4	13	1 Trousers	1	15½
1 Carpet	4	8	1 Pajama	0	6
2 Tunics	3	12	1 Pairan	0	6
2 Trousers	3	15	1 Pair of boots	2	12
2 Black trousers	2	6	1 Black putka	1	10
2 Chudders, or sheets	1	8	1 Forage cap and havresack	1	4
3 Pajamas, or pantaloons	1	2	1 Great-coat	4	11
3 Pairans	1	2	1 Blanket	½	13
2 White pugrees, or turbans	0	10	1 Waterproof sheet	2	0
1 Canvas bag	4	5½			
2 Pairs of boots	5	8			
Cooking pots	8	4			
1 Light coat	1	3			
2 Black putkas	3	4			
1 Forage cap and havresack	1	4			
Total	52	3½	Total	21	11½
From this weight 10 lbs. 3½ ozs. may be deducted for clothing in wear.			All carried by the man himself, in addition to Enfield rifle, accoutrements, and 60 rounds of ammunition.		

3rd and 25th Regiments Bombay Native Infantry.

The 3rd and 25th Regiments Bombay Native Infantry, left Bombay together in the middle of December, and arrived at Annesley Bay on the 29th and 31st idem. Detachments were sent to Hadoda, Wiah, and Kumayli, and these regiments were employed on convoy and fatigue duties, in the Pass during the month of January. Every available man was employed on road making, guard duty, &c. Men coming off guard were at once detailed for fatigue duties, and leaving their fatigue duties in the evening, went on guard next morning.

The 25th Regiment Native Light Infantry arrived at Senafé on the 17th of March, and left for Adigrat on the 24th. On the 3rd and 5th of April, a wing left for Antalo, *under the command of Major* Fairbrother, whence it gave constant parties as escort for convoys of stores, &c., for the front.

Arrival of the 3rd Regiment N.I. at Dildi.

A wing of the 3rd Regiment Native Infantry was pushed on to the front, but did not succeed in getting beyond Dildi when Magdala was stormed.

The 3rd and 25th Regiments returned at once to the Pass to garrison the different stations, where they gave over their smooth-bore arms for presentation to Prince Kassai, and obtained Enfield rifles in lieu.

Enfield rifles issued to Native Infantry.

On the 30th of May, the 25th Regiment N.L.I., under their Commanding Officer, Lieut.-Colonel A. B. Little, an officer who had performed much distinguished service in Central India during the Mutiny, was ordered to proceed among the hills round the Pass of Suru, to endeavour to trace out and punish the murderers of Mr. Dufton.* On the 10th June, this regiment was the last to leave Kumayli, the last inland depôt

* Lieut.-Colonel Little's report on this subject will be found at page 101. Chapter XXI.

evacuated on the departure of the Force, and on the 17th and 18th idem, having remained at Zula as the rear-guard of the whole Force, evacuated that place.

The services of the 23rd Punjab Pioneers have been often alluded to in previous chapters, and have moreover been given in detail in Chapter XVI., page 29. 23rd Punjab Pioneers.

The 1st Company of Bombay Artillery, under Major Marrett, and a company of the Bombay Marine Battalion, which arrived at Zula with the reconnoitring party on the 4th October, 1867, were employed between Zula and Sênafé, and their proceedings have already been narrated in Chapters VIII. and IX. 1st Company Bombay Artillery.

The troops located at Zula and in the Pass of Suru when the return march commenced, were the 5th Battery 25th Brigade Royal Artillery, the G and H Companies Madras Sappers, the 2nd and 18th Bombay Native Infantry, and the 21st Punjab Native Infantry. Troops at Zula.

The 5th Battery 25th Brigade Royal Artillery, under the command of Major Bogle, was detained at Zula, and its men and mules were constantly employed in carrying and escorting treasure and ammunition from Zula to the highlands. In this service they marched nearly 1,000 miles. The cheerfulness with which Major Bogle and his officers and men undertook this duty was reported by Major-General Russell as "deserving "of the highest praise. Major Bogle was not satisfied with merely performing the "duty when ordered, but came forward on all occasions, expressing a wish that his "battery might be employed for the good of the service, rather than remaining in "garrison. Considering that his battery was the only portion of British troops in the "plains, I think the willing work done highly creditable." 5th Battery 25th Brigade Royal Artillery.

The Madras Sappers were constantly at work in increasing the width of the pier, making embankments along the shore to prevent the invasion of the sea, erecting hospitals and other buildings, and assisting in the making of the railroad. Those at Kumayli were employed on the railroad and at the Wells, and they all performed their work with untiring energy. Madras Sappers.

The 2nd Grenadiers and 18th Regiment Native Infantry landed at Zula early in February, and were continuously employed in working parties, landing stores, or on the railroad. Wings of these regiments were, for nearly four months, encamped between Zula and Kumayli, cutting through embankments and making the road for the rail, carrying sleepers and laying them, and all work appertaining to the formation of a line of railway. These men were, it should be remembered, encamped in a hot plain, employed in digging and carrying sand, removed from all excitement, without any of the recreations and pleasures of camp life. The Head-Quarter Wing of the 2nd Grenadier Regiment was employed at Kumayli in working parties on the railroad, wells, and other works. The 2nd Grenadier and 18th Regiments were both similarly employed in working parties at Zula and on the rail. 2nd and 18th Bombay Native Infantry.

So hard was the work at Zula, every man that could be spared being sent to work on the railroad, that the troops rarely had two consecutive nights in bed, while they had to furnish working parties to land stores, and to work at the pumps for water.

The organization and establishment of the 21st Punjab Native Infantry, have been described in Chapter XVI., page 30.

On the 28th January, this regiment disembarked at Zula, and marched to Kumayli, where the whole of the regiment, with the exception of 15 per cent., including sick, was daily employed on the railway works, clearing jungle, making roads, burning and burying dead camels and mules, and escorting stores. The mules of the regiment were used in conveying Commissariat stores from Zula to Kumayli until the 10th March, when the regiment was ordered to occupy the posts in the Pass, leaving detachments at Suru, Services of 21st Punjab N.I.

Undul Wells, and Rahagedi. The Head-Quarters arrived at Senafè on the 19th March, when the men of the regiment at each post had to escort all stores, sick, keep the roads in repair, maintain communications, and prevent the Shohos from plundering the stores while in transit; they had to supply water to the animals passing through their posts, to escort all travellers, and to attend to the postal requirements.

Arms and Equipment.

During the time this regiment was in Abyssinia not a single soldier belonging to it died, and only six casualties occurred during the Expedition.

The accoutrements of the 21st Punjab Infantry were of brown leather; their arms, smooth-bore musket, Enfield pattern; ammunition, 500 rounds per man, packed in mule boxes, with proper proportion of carry 2 boxes; entrenching tools, 50 pickaxes, 100 ammunition slings to felling, 2 crowbars, and 170 jungle knives.

The clothing consisted of 1 blanket, 2 canvas frocks, 1 great-coat, 2 pairs flannel pairs warm socks, 2 pairs English boots, 1 waterproof 3 fighting men, 1 water canteen, 1 waterproof kit bag, 1 cloth tunic, 1 pair of cloth pyjamas, and 1 havresack. The clothing consisted of, for each man, 1 blanket, 1 coat, 1 pair of pyjamas, 2 flannel banians, 2 pairs woollen socks, 1 pair boots, 1 great-coat, 1 water canteen, and a havresack.

Distance between each station from Zula to Magdàla.

The distances between each of the stations, from Zula to Magdàla, measured by the Trigonometrical Survey were:—

From—			Miles.
Zula to Kumayli	..	..	14·000
Kumayli to Suru	..	..	13·250
Suru to Undul Wells	..	..	13·250
Undul Wells to Rahagedi	..	..	16·750
Rahagedi to Senafè	..	..	8·500
Senafè to Guna-guna	..	..	12·000
Guna-guna to Focada	..	..	14·000
Focada to Adigrat	..	..	14·000
Adigrat to Mai Wahez	..	..	14·250
Mai Wahez to Ada Baga	..	..	16·500
Ada Baga to Dongolo	..	..	10·000
Dongolo to Agula	..	..	10·000
Agula to Dolo	..	..	16·000
Dolo to Eikhullet	..	..	9·000
Eikullet to Antalo	..	..	12·250
Antalo to Masgah	..	..	8·500
Masgah to Mashik	..	..	8·000
Mashik to Atsala	..	..	9·500
Astala to Bulago	..	..	8·500
Bulago to Makan	..	..	6·000
Makan to Ashangi	..	..	13·800
Ashangi to Mussagita	..	..	7·782
Mussagita to Lat	..	..	6·727
Lat to Marawah	..	..	10·251
Marawah to Dildi	..	..	14·408
Dildi to Wandach	..	..	7·952
Wandach to Muja	..	..	6·293
Muja to Takazze	..	..	6·306
Takazze to Santara	..	..	4·434
Santara to Gahso	..	..	11·434
Gashо to Sindi	..	..	18·205
Sindi to Bethor	..	..	6·765
Bethor to the Jedda	..	..	6·359
Jedda to Talanta	..	..	8·906
Talanta to Bashilo River	..		4·875
Bashilo to Head-Quarter Camp	..		6·397
Head-Quarter Camp to Magdàla	..		·4
Total distance from Zula to Magdàla	..		379·395

Captain Holland's Report of 22nd April. Strength of Transport Train on 13th April.

"The strength of the Transport Train in the country when Magdàla was captured, "was 7,365 camels, 11,155 mules, 1,708 ponies, 6,922 pack bullocks, 901 draught "bullocks, 784 donkeys, 305 mule carts, and 345 bullock carts; being an increase of "2,043 camels, 846 mules, 248 ponies, 885 pack bullocks, 367 draught bullocks, 769 "donkeys, 32 mule carts, and 75 bullock carts, since the 1st April.

"The number of mules and ponies on duty with the Highland Train was 7,241, and "of these 2,060 were reported as sick. The sick in the Lowland Train were 450 mules "and ponies, 674 camels, and 441 bullocks.

"Orders were issued for all the available transport animals that could be spared from "Zula to be sent up to meet the Army on its return march, and to assist in clearing "out the various depôts that had been established along the line of route. The conven- "tion for the carriage of commissariat stores by country transport had succeeded well, "and the supplies now on the road were ample to meet the requirements of the Force. "Orders were sent to Egypt to stop the purchase of any more transport animals, those "purchased up to date of receipt of the order were to be sent to Zula.

"The telegraph line had been completed to Antalo before Magdāla fell, and "Lieutenant St. John, R.E., the officer in charge, had been directed not to carry it any "further. The line worked fairly, but constant interruptions continued to occur. State of Telegraph.

"The photographers were employed in taking views of Magdāla and its neigh- "bourhood, and the signallers had proved very useful during the operations before "Magdāla. Photo-graphers. Signallers.

"The Jedda River afforded but little water, and for the few days that the troops "were encamped on the Talanta Plateau, the supply was obtained from the pools in the "valleys. The Bashilo River, a muddy stream, running and knee deep after several "severe thunder-storms, was the only water crossed deserving the name of river. It was "one of the main sources of supply to the Army when encamped before Magdāla.

"The supply of water in the small native wells in the ravines around the camps before "Magdāla was scanty, and, owing to the number of dead animals thewater had become "so tainted as to be unfit for any purpose. Fresh wells were dug and old ones filled "up, and the dead bodies in and around the wells were either covered up or removed. Water supply.

"All puckalies and bheesties were collected and sent under an officer to obtain "water; on their return the water was distributed in fair proportion to the different "regiments and detachments.

"When the Force was at Magdāla, water was obtained from the Bashilo River, "about 8 miles north of Fahla, from pools fed by a spring in a ravine 3½ miles north- "west from Fahla, from wells dug at the foot of the western slope of Fahla, from a "pool fed by a spring in a ravine about 2 miles south of Fahla, and from small wells in "two ravines to the north-west of Fahla. At Magdāla.

"The Second Brigade, in addition to the supply from the Bashilo River 6 miles in "their rear, obtained water from wells dug in a ravine to their front, to the north of the "Fahla Saddle. A spring in a small ravine was cleared and its water stored, and a tank "dug at the bottom to afford drinking water for mules. Water was met with, in some "cases, at an average depth of 4 feet, and, generally, the supply was uniform. The "water was clear, but of a peculiarly bitter taste. This was particularly the case in the "supply obtained from the ravine in front of the Second Brigade, but the medical officers "said it was not injurious.

"There was a dry tank on Fahla, and another on Magdāla, and water was found in "small quantities on Islamgie. Numbers of wells had been dug at the foot of Magdāla, "and a hill-side spring was observed on the south side of Selassie.

"The patent tube wells which had of necessity been left behind, arrived on the 16th of "April, and the same evening a supply of clear water, though of an earthy taste, was "obtained. The drain upon the water supply, owing to the inhabitants of Magdāla and "Selassie leaving those hills, became so excessive, that it was necessary to place guards "over the spots where water was obtainable. The supply of water on the 17th had been "so far developed as to be sufficient for the troops—the most satisfactory results having "been obtained from the wells dug at the foot of the western slope of Fahla. On return "to the Talanta Plateau four pumps were driven at the head of one of the valleys, and

"afforded a fair supply for two days. The pumps were then drawn and driven more to "the south, and a good spring was tapped on the valley side to the east.

Want of water for 60 hours.

"During the time the troops were at Magdāla, and before the completion of these "arrangements, the want of water was greatly felt throughout the Force. On the 10th, "after the troops had marched throughout the day on short allowance, and engaged the "enemy in the evening, little or no water was at hand to supply their wants when they "encamped at nightfall for a few hours, before marching to a more favourable position "on the morning of the 11th. In the evening, when the puckalies returned with "the water, the taint and smell of it was so strong that none could drink of it, "although boiling and adding tea to it were resorted to. On the morning of the 12th, "the puckalies were despatched to the Bashilo, and the same evening, it may be said, "the men for the first time tasted water they could swallow after suffering from the want "of it for 60 hours. Washing in any form was quite out of the question.

"Extra works at the different stations had been carried out to meet the demand for "water along the line of march. A flood occurred at Senafè on the 29th March, "which covered the ground on which the waterworks there were constructed. It caused "but little destruction, but the sources of the water were polluted by the refuse washed "down from the Transport Train Lines. Water was found by driving the tubes 60 yards "lower down. The supply was abundant, and the troughs were removed and re-erected, "and were available for the transport animals on the evening of the second day. The "Bastier pump broke at Senafè; on this occasion it was however mended, and a well 13 "feet deep was dug and protected by a lime-built wall for its reception. Large drains, "10 feet wide, were also dug, to carry off the surface waters, in case of another flood.

Trigonometrical Survey.

"As the Army advanced, the officers of the Trigonometrical Survey had steadily "carried on their work. The officers working from Antalo and Adigrat met at Dolo, "and so completed a sketch of the country, embracing a belt on either side of the line "of march from Zula to Antalo. One officer traversed between Antalo and Ashangi, "and another was engaged in sketching the same ground, while Lieutenant Carter, "who superintended the work, came on and completed the traverse from Antalo to the "Bashilo River. On the 10th he joined the Head-Quarter Camp and completed a "survey of the position of Magdāla, adjacent hills, and the ground between the Bashilo "and Magdāla.

Postal arrangements.

"No alteration had taken place in the arrangements made for carrying the post, "except that while the Army was encamped before Magdāla, native runners were "employed thence to the Jedda River, up to which point Cavalry troopers carried the "post as heretofore. The post from Zula took eleven days in transit to Magdāla "at this time.

Depôt at Dildi formed

"In consequence of a disturbance at Dildi about this time, it became necessary to "appoint an officer to the command of the depôt there, and all parties of soldiers, "sailors, and muleteers remaining there were placed under his command, and directed "to report to him daily. This officer, Lieutenant Warburton, R.A., organized a police, "with a provost-marshal, from amongst the troops at Dildi, and took the necessary "precautions for the protection of the camp."*

* Extracted from the Report furnished to the Horse Guards by Captain Holland, Assistant Quartermaster-General, dated 22nd April, 1868.

JAMES FERGUSON, LITH.

THEODORE.

From a Sketch taken after death by Capt. C.F. James, D.A.Q.M.G.

Lith. at the TOPL DEPOT of the WAR OFFICE
COL. SIR H. JAMES, R.E. DIRECTOR

CHAPTER XX.

OPERATIONS FROM THE 14TH TO THE 22ND APRIL.

Brigadier-General Willby placed in command at Magdāla.

AFTER the capture of Magdāla, the command of the place was entrusted to Brigadier-General Willby, who held it with the 33rd and a wing of the 45th Regiments. So thickly was the fortress inhabited, and so great was the crowd of people, that it was no easy matter to establish order. Guards were, however, placed at the gates, and at all points where protection was required.

Crown and seal of Theodore.

The crown and royal seal of Theodore were taken possession of in the name of the Queen. A letter was addressed to his widow, in which Sir Robert Napier offered to accomplish her desires with regard to the disposal of the body of the late King. By her request, on the 14th, it was buried with all decency, but without military honours, in the Church of Magdala.*

Burial of Theodore.

Disposition of troops.

On the 15th, the 4th (King's Own) Regiment relieved the 33rd in Magdāla, and the 45th were removed to Islamgie, to reinforce the detachment of the 10th Native Infantry, engaged under Colonel Field in protecting the captured arms and ordnance. The inhabitants of Magdāla were collected at Arogie, where great vigilance was necessary to protect them from the Gallas, who were lying in wait both day and night for opportunities of plundering or destroying them. Notwithstanding the friendly relations with the Queen of the Gallas, her people were so little under restraint that it was frequently necessary to fire upon them, to drive them off from molesting the water-parties and carrying away the mules. One party of them, in search of plunder, even dared to make their way into Magdāla, where they were captured by the guard of the 33rd regiment.

Attacks made by Gallas.

Anxious as the British Commander was to abstain from any further interference in Abyssinian affairs after the object of the Expedition had been attained, it was necessary, for the sake of the national credit, that due consideration should be shown for the large numbers whose interests and safety had centred in Theodore's existence, and who

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Proceedings of Committee to identify the person of Theodore, and to enquire into the cause of his death.

* The following are the proceedings of a Committee, assembled at Magdāla on the 14th April, 1868, to identify the person of, and to inquire into the cause of the death of, Theodore:—

President:—Captain J. D. Johnstone, 33rd Regiment.

Members:—Ensign Cecil Conor, 33rd Regiment: Assistant-Surgeon R. Kemp, 33rd Regiment.

The Committee having assembled pursuant to order, proceed to examine the body. Dr. Blanc appears and identifies the body as that of the late Theodore, King of Abyssinia, and further states that, from the appearance of the wound, that there can be no doubt that it was self-inflicted.

Opinion of the Committee:—

"The Committee, from the evidence of Dr. Blanc, is of opinion, that the remains are those of the late "Theodore, King of Abyssinia; and further, from the evidence of Dr. Blanc, and from personal inspection, "that the King committed suicide by a bullet, which appears to have entered the mouth in such a manner "that it could not but have been self-inflicted.

"J. D. JOHNSTONE, Captain 33rd Regiment, President,
"CECIL CONOR, Ensign 33rd Regiment,
"R. KEMP, M.D., Assistant-Surgeon, H.M.'s 33rd Regiment, } Members.

"Camp Magdāla, 14th April, 1868."

Inhabitants of Magdāla sent to their districts.

remained disarmed and unprotected, and exposed to merciless plunder and slaughter, at the hands of the wild tribes whom circumstances had for the moment converted into the allies of their conquerors. They included many women, and some had considerable property in goods and cattle. On the 15th and 16th they were told to move from Arogie and go freely to their own districts, taking with them all that belonged to them. The defile from Arogie to the Bashilo was guarded for their protection by British infantry, and their march was escorted by patrols of cavalry as far as Bethor, where their safety from being plundered was assured.

Disposal of Magdāla.

The disposal of the fortress of Magdāla then demanded the attention of Sir Robert Napier. It is situated, geographically, within the territory of the Wollo Gallas, from whom it had been wrested by Theodore about ten years previously. In his hands it imposed an effectual check upon the encroachments of the Mohammedan Gallas on Christian Abyssinia. Sir Robert Napier desired, in the interest of Christianity, to place the stronghold in the possession of Wagshum Gobaze, the ruler and principal chief of the neigbouring portion of Abyssinia. A letter was accordingly sent to Gobaze, offering him the possession of the fortress; but, notwithstanding his repeated invitations to the British to come quickly to his aid, he had removed himself and his army to a distant quarter before the arrival of the English force in front of Magdāla. His Lieutenant, Dejatch Mashesha, was however in the vicinity, and to him the place was offered for his master. Before his answer could be received several claimants applied for it. One of these was the Chief of Daont, and the two rival Queens of the Gallas each solicited it for herself. Werkait first presented herself in the camp to press her claims, and was greatly affected in revisiting a locality which had been associated with so many misfortunes to her family and people. She said, "We fought "with Theodore as long as we could, and when his power was too strong for us to resist "any longer, my son submitted to him on receiving a promise of good treatment, not-"withstanding which he was inhumanly cut to pieces, and thrown over the precipice of "Magdāla; and now I have come to see the grave of my enemy Theodore, and the place "where my son fell." At this time the offer of the fortress had been made to Gobaze's Lieutenant, and his answer had not been received. Magdāla was still in the possession of the British troops, and the exodus of its former inhabitants was not completed; therefore it was not judged expedient that, at the moment, Werkait's desire to ascend the mountain should be indulged. Almost before her story was concluded intimation was received that her rival (Masteeat) was also in the neighbourhood, and on her way to offer her congratulations and submit her claim. Sir Robert Napier at first hoped to be able to make peace between the rival Queens; but when this was hinted at to Werkait, she said, "When "two persons are striving for a Crown, how can peace be made between them? If Masteeat "were to make peace with me to-day before you, she would betray me to-morrow." The news of Masteeat's approach caused great uneasiness among Werkait's escort and adherents; and after a second interview with the Commander-in-Chief, during which she exhibited symptoms of much distress, she took a hasty departure, apprehensive lest she should be intercepted by her more powerful and more fortunate rival—more fortunate because her son was alive, and the centre of the hopes of the large body of the people, while to Werkait there remained only the memory of her son, treacherously slain by Theodore.

Magdāla offered to Wagshum Gobaze.

Werkait, Queen of a tribe of Gallas.

Masteeat, Queen of a tribe of Gallas.

Wagshum Gobaze refuses Magdāla.

Dejach Mashesha arrived in camp, and in the name of the Wagshum Gobaze declined to accept Magdāla, alleging as his reason that it would require so large a garrison to hold it that it would be a source of weakness rather than of strength. Masteeat shortly afterwards arrived with her son, Imam Ahmed, and expressed no small gratitude and rejoicing at Theodore's fall. She had responded very effectually to the

request of Sir Robert Napier, to close all avenues by which Theodore could have escaped, and thus she came in the character of an established ally. To her request for the possession of Magdála, Sir Robert Napier was enabled to answer, that as Gobazo's Lieutenant had declined to receive it, he would abandon the place after dismantling and burning all of it that could be so destroyed, as a mark of the anger of the British at the ill-treatment of their countrymen, as well as of their abhorrence of the cruelties which Theodore had committed there. To this the Queen replied that, indeed, nothing but fire could purify it. On being asked if she could make peace with Werkait, she answered that she would gladly do so, but that it was impossible, because if Werkait were to swear friendship on the Koran itself to-day, she would violate her oath to-morrow. Magdála to be delivered to the Gallas.

Advantage was taken of the friendly relations with Masteeat to obtain from her a safe conduct and promise of protection for as many of the people of Magdála as had occasion to pass through Galla territory on their way home, as well as for the care of some of the Abyssinians who had been wounded in the action of Arogie.

The elephants and heavier ordnance having been sent in advance on the 15th, on the 17th orders were issued for every one to be cleared out of Magdála by 4 P.M. At that hour working-parties commenced the demolition of the captured ordnance, and the destruction of the fortress.* The former were burst; the defences and gates of the *amba* were mined and sprung, and fire was applied to the palace and other houses, which spread quickly from habitation to habitation, burning slowly, and sending up a heavy cloud of dense smoke, which could be seen for many miles. Destruction of Magdála.

On the 18th the last of the British force crossed the Bashilo on its homeward route, and encamped that evening on the Talanta plain, while Masteeat lost no time in establishing herself and her followers in the dismantled fortress of Magdála. Bashilo recrossed.

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* The following were the orders issued for the destruction of the fortress of Magdála:— Orders for the destruction of Magdála.

"No. 1050 of 1868.

"The following orders for the destruction of the magazine and buildings on Magdála are forwarded to "Major-General Sir Charles Staveley, K.C.B., Commanding 1st Division, for guidance:—

"The troops, with the exception of the Sappers and Miners, under the direction of Captain Goodfellow, "R.E., will be entirely withdrawn from Magdála by 4 P.M. to-morrow, the 17th instant.

"Captain Goodfellow, R.E., will then destroy the Kafirber gate, and will ascertain by careful observation "whether he can explode the powder magazine without injury to the church. He will also consider whether "it will be safe to explode the magazine first and then fire the remaining buildings successively, commencing "from the Kafcber gate, or southern portion of the fort, and finally, after withdrawing the Sappers, "will blow up the northern entrance, under such arrangements as will prevent any injury to his party. "Should he be able to blow up the magazine without injuring the church, he will do so, otherwise he will not "blow it up, but will fire the buildings in such a way as to prevent any injury to his men from the accidental "explosion of the magazine.

"He will then join the withdrawn garrison of Magdála, which will return to the camp occupied by the "23rd Punjab Infantry, where they will rest for the night, and be prepared to march to Talanta under such "detailed instructions as they may receive from Major-General Sir Charles Staveley on the 18th instant.

"As the destruction of the buildings at Magdála may be the signal for the Gallas to come forward in "considerable numbers, it will be necessary that the garrison should not pass Islamgie until joined by the "Sappers.

"No stragglers whatever should be permitted to remain behind. A Provost-Serjeant should be in "attendance, and summary punishment inflicted on any who may attempt to linger behind for the sake of "plunder or any other object.

"Care should be taken that the orders on this point shall be made known to the camp followers.

"No watering parties or piequets should be overlooked, and all baggage should be sent away early "enough to be clear of the troops.

"By order,

"(Signed) T. J. Holland, *Captain, Assistant Quartermaster-General.*
"*In charge of Quartermaster-General's Office.*

"*Camp before Magdála, 16th April,* 1868."

Preparation for the return march.

On the 19th preparations were made for the return of the whole force to Zula, and precautions taken to ensure the safety of the baggage and convoys, from the numerous robbers and marauders who hung upon the flanks and rear, attempting on every occasion to plunder. The rear guard found it necessary frequently to fire upon them.

Captain Holland's report of 22nd April.

"A pioneer force, under the command of Major Chamberlain—and composed of one "troop of the 3rd Light Cavalry, the 3rd and 4th Companies of the Bombay Sappers and "Miners, and the Head-Quarter Wing of the 23rd Punjab Pioneers—was to leave the camp "on Talanta Plain on April 21, and proceed in advance of the Force by regular marches to "Antalo, repairing the road where required, and making it practicable for elephants and "mules. The released captives were escorted by this force. The Head-Quarters "of the 1st Division, with the 2nd Brigade, composed of the 3rd Regiment Sind "Horse, the 12th Bengal Cavalry, the Armstrong Battery, the B Mountain Battery, "the 8-inch mortars, the 2nd Company Sappers and Miners, the 33rd Regiment, the "45th Regiment, and the 10th Native Infantry, were to leave Talanta Camp the day after "the pioneer force, and proceed to Antalo by regular marches, halting for one day at the "Takazze, Dildi, Ashangi, and Antalo; while the Head-Quarters of the 3rd Native "Infantry were to march from Dildi to Antalo, three days before the pioneer force arrived "at the former station. The Head-Quarters of the Army with the 1st Brigade, composed "of the Head-Quarter Wing 3rd Dragoon Guards, the 3rd Light Cavalry, A Mountain "Battery, the Naval Brigade, the 4th (King's Own) Regiment, the 10th Company of "Royal Engineers, the Madras Sappers, one wing of the 23rd Punjab Pioneers, and the "Beloochees, were to leave Talanta the day after the 2nd Brigade, and follow it by regular "marches to Antalo. All detachments of regiments at different stations were to join "their regiments as they passed through. The 2nd Field Hospital, with the wounded, "moved with the pioneer force, and the 1st Field Hospital with the 1st Brigade."*

Released Captives handed over to foreign officers.

On Talanta Plain the released European captives belonging to other nationalities than the British, were finally handed over to the foreign officers who accompanied the Head-Quarters of the army during the Expedition. The plunder taken in Magdala was sold by auction, and the proceeds of the sale distributed among the troops as prize-money. The campaign was also declared to be over, in the following General Order which the Commander-in-Chief issued to the Force, and which was read on a general parade of all the troops by Colonel the Honourable F. Thesiger, Deputy Adjutant-General:—

General Order by Sir Robert Napier on the completion of operations.

"Soldiers and Sailors of the Army of Abyssinia! The Queen and the people of "England entrusted to you a very arduous and difficult Expedition—to release our "countrymen from a long and painful captivity, and to vindicate the honour of our country, "which had been outraged by Theodore, King of Abyssinia.

"I congratulate you, with all my heart, on the noble way in which you have fulfilled "the commands of our Sovereign!

"You have traversed, often under a tropical sun, or amidst storms of rain and sleet, "400 miles of mountainous and rugged country.

"You have crossed ranges of mountains (many steep and precipitous), more than "10,000 feet in altitude, where your supplies could not keep pace with you.

"In four days you passed the formidable chasm of the Bashilo; and, when within reach "of your enemy, though with scanty food, and some of you even for many hours without

* Extracted from the Report furnished to the Horse Guards by Captain Holland, Assistant Quartermaster-General, dated 22nd April, 1868.

"either food or water, you defeated the army of Theodore, which poured down upon you "from its lofty fortress in full confidence of victory.

"A host of many thousands have laid down their arms at your feet.

"You have captured and destroyed upwards of 30 pieces of artillery, many of great "weight and efficiency, with ample stores of ammunition.

"You have stormed the almost inaccessible fortress of Magdala, defended by Theo- "dore and a desperate remnant of his Chiefs and followers.

"After you forced the entrance to his fortress, Theodore, who never himself showed "mercy, distrusted the offer of it held out to him by me, and died by his own hand.

"You have released not only the British captives, but those of other friendly nations.

"You have unloosed the chains of more than 90 of the principal Chiefs of Abyssinia.

"Magdala, on which so many victims have been slaughtered, has been committed to "the flames, and now remains only a scorched rock.

"Our complete and rapid success is due—firstly, to the mercy of God, whose Hand "I feel assured, has been over us in a just cause; secondly, to the high spirit with which "you have been inspired!

"Indian soldiers have forgotten the prejudices of race and creed to keep pace with "their European comrades.

"Never did an army enter on a war with more honourable feelings than yours. This "it is that has carried you through so many fatigues and difficulties; your sole anxiety "has been for the moment to arrive when you could close with your enemy.

"The remembrance of your privations will pass away quickly; your gallant exploit "will live in history.

"The Queen and the people of England will appreciate and acknowledge your "services; on my part, as your Commander, I thank you for your devotion to your duty, "and the good discipline you have maintained throughout.

"Not a single complaint has been made against a soldier, of fields injured, or villagers "wilfully molested, either in person or property.

"We must not, however, forget what we owe to our comrades who have been labouring "for us in the sultry climate of Zula, the Pass of Kumayli, or in the monotony of the posts "which maintained our communications. One and all would have given everything they "possessed to be with us; they deserve our gratitude.

"I shall watch over your safety to the moment of your re-embarkation, and shall, to "the end of my life, remember with pride that I have commanded you."

CHAPTER XXI.

OPERATIONS FROM THE 22ND APRIL TO THE 17TH JUNE.

THE RETURN MARCH, RE-EMBARKATION, AND FINAL EVACUATION.

Return march.

THE troops moved off as ordered, and on April 22nd the Commander-in-Chief, with the last of the Force, marched to the brink of the Jedda Ravine, and on the 23rd reached Bethor. On the 24th he moved again to Abdikum, where he received in audience a large party of Abyssinians of note, who had been liberated from Theodore's prison-house on the fall of Magdala. The first was Birru Gashu, the Chief of Gojam, who bore on his enfeebled frame the marks of 14 years of confinement in chains. The second was Dejach Aria, Prince of Enderta, the maternal uncle of Kassai, Prince of Tigré. For many years before his imprisonment, he had waged war with Ubye for the supremacy in Tigré. Ubye defeated him, and in 1855 Theodore defeated and dispossessed Ubye, and made Aria Viceroy of Tigré, but distrusting him, summoned him to Magdala, and made him a prisoner. The third was Wagshum Tiferri, hereditary Prince of Wag, who prevented Gobaze from falling into the hands of Theodore, for which offence he had been imprisoned. To all the British Commander spoke, urging upon them the necessity of peace in the present state of Abyssinia. These Chiefs were dismissed, but the widowed Queen of Theodore, with her son and two brothers, still remained as guests in the British camp. On the 26th April, the bottom of the Takazze Valley was reached, where Lieutenant Morgan, R.E., who had so ably and zealously directed the operation of the Army Signallers throughout the operations, died from the effects of over-exertion, exposure and fatigue in the execution of his duty. On May 3rd, the Force reached Lat; on the 9th Atsala, and on the 10th Mashik. Here the Queen, who had been ever treated with universal courtesy, and had been attended by the medical officer attached to the personal staff of the Commander-in-Chief, was reported to be seriously unwell. She was a daughter of Ubye, the former King of Tigré, who had been taken prisoner, with his whole family, by Theodore, about 13 years previously. Ubye remained a captive until his death. He had been originally the hereditary ruler of the province of Semen, a mountainous district south of Tigré. His empire over the latter province had been acquired by conquest. Theodore took his daughter from prison, and married her while still a child; but her elevation by no means bettered the condition of her two brothers, who had been her fellow-captives, for they had never so much as seen their sister since her marriage till released from prison by the British.

Chiefs released from Magdala.

Death of Lieutenant Morgan, R.E.

Illness of Theodore's Queen.

These Princes desired to return to their native province of Semen, but acknowledged that they could not there protect their sister, as they had neither arms nor money; and feared to take with them her child, Alamayou, lest his life might be taken by any aspirant for the empire of Abyssinia. They were accordingly allowed to depart, while the Queen and her son remained as guests in the camp.

The following is a Roll of the principal Chiefs liberated from Magdála, showing the period of their imprisonment, and their disposal after release :—

Roll of Chiefs liberated from Magdála.

No.	Names.	Length of Imprisonment.	Position and Country.	How disposed of.
		Years.		
1	Faris Ali	11	Chief of Yeju ..	Rebelled temporarily, but would probably submit to Gobaze.
2	Wagshum Tiferri	4	Chief of Wag, cousin of Wagshum Gobaze	Submitted to Gobaze.
3	Dejach Sahelo	5	Chief of Haramat ..	Joined Kassai, and submitted to him at Senafé.
4	Ajaj Negussie	5	Chief of Haramat, son of Sahelo	Remained at Haramat.
5	Balgeda Muro	5	Chief of Tera ..	Remained at Dongolo.
6	Shum Agame Aragavi ..	7	Chief of Agame ..	Joined Kassai of Tigré, and submitted to him.
7	Lij Sahaja	5	Chief of Id	Ditto.
8	Shum Sloa Ezekias	5	Chief of Sloa	Went to Semen.
9	Dejach Iman	15	Brother of Ras Ali ..	Left Magdála without paying his respects.
10	Birru Goshu, and two brothers	15	Chiefs of Gojam ..	Joined Gobaze and submitted to him.
11	Kassa, son of Ubye ..	14	Chief of Semen ..	Brother of the Empress; went to Semen.
12	Gwangul, son Id	14	Chief of Id	Ditto.
13	Hugla Dereso	3	Chief of Selemh ..	Left Arogie sick; destination unknown.
14	Goshu Wondia	4	Chief of Belesa ..	Went to his country.
15	Ras Walda Mariam ..	1	Chief of Begemeder ..	„ „
16	Ras Gebrie	1	Chief of Id	„ „
17	Ras Waheda Tadla ..	1	„	„ „
18	Betwaded Tadla, and two brothers	1	„	„ „
19	Engeda	Unknown	Chief of Dembea ..	Went to his country under safe-conduct of Masteeat, Queen of the Gallas.
20	Maureme	2	Chief of Shoa ..	
21	Ubié	2	„	Ditto.
22	Aregi, son of Sewale Sellassie	2	„	Ditto.
23	Ajah Wondie	1	Chief of Begemeder ..	Went to his country.
24	Ajaj Geret	3	„ „ ..	„ „
25	Ajaj Gebra Selassie ..	1	„ „ ..	„ „
26	Belala Gobazye	1	„ „ ..	„ „
27	Sergie Deresso	1	„ „ ..	„ „
28	Lej Meshasho	Unknown	„ „ ..	„ „
29	Wossen Illma	1	Chief of Koara ..	„ „
30	Wossen Dareya	1	Chief of Id	„ „
31	Pasha Hayle	10	Chief of Mecha ..	Unknown.
32	Talef Engeda	1	Chief of Tigre ..	Joined Kassai of Tigré, and submitted to him.
33	Ras Lebie	3	Chief of Maga ..	Went to Shoa.
34	Balgida Ara	13	Chief of Enderta ..	Joined Kassai of Tigré, and submitted to him.

There were several others of Shoa and the Wollo country, names unknown, but of minor importance.

Quartermaster-General's Return showing strength and disposition of the Force on the 1st of May.

The following Returns show the strength and disposition of the several corps serving in the Force on the 1st May :*—

Corps.	Station.	Number of Troops or Companies at each Station.	At Regimental Head-Quarters, or on detached duty at the Station.					Effective Strength, exclusive of those sent or left at Home or in India.							
			Field Officers.	Captains.	Subalterns.	Staff.	Native Officers.	Staff Sergeants.	Sergeants.	Trumpeters or Drummers.	Farriers.	Rank and File.			Horses, including Officers' Chargers.
												Fit for Duty.	Sick in Hospital.	On Command.	
British Cavalry.															
3rd Dragoon Guards, Right Wing	Marawah ..	3	2	2	5	3	..	1	10	3	3	167	2	17	203	236
Native Cavalry.															
3rd Sind Horse	Lat	6	2	..	4	1	20	..	35	5	1	286	41	59	427	399
3rd Light Cavalry	Dildi ..	6	2	2	1	3	16	2	36	6	..	242	2	131	419	476
10th Bengal Cavalry	Makan ..	6	1	..	4	2	5	..	54	4	10	93	6	271	438	456
12th ,, ,, ...	Lat	6	1	4	2	3	16	6	40	6	5	151	..	243	451	469
Royal Artillery.															
G Battery 14th Brigade	Lat	1	..	2	4	1	..	3	6	2	1	76	8	50	146	117
A ,, 21st ,, ...	Dildi ..	1	..	2	4	1	..	3	6	2	1	66	5	8	91	11
B ,, 21st ,, ...	Lat	1	..	1	3	1	..	3	6	2	1	60	3	8	83	14
5th ,, 25th ,, ...	Senafé ..	1	..	2	4	2	..	2	6	2	..	92	1	29	132	19
Native Artillery.															
No. 1 Company, Bombay	Senafé ..	1	..	1	2	..	3	1	6	3	..	67	..	9	86	2
Naval Brigade.															
Rocket Battery	Dildi ..	1	..	..	5	2	..	..	4	1	..	82	13	..	100	10
Royal Engineers.															
10th Company	Dildi ..	1	1	..	1	1	..	1	3	1	..	28	1	48	82	3

* Quartermaster-General's Return, 1st May, 1868.

Corps.	Station.	Number of Troops or Companies at each Station.	At Regimental Head-Quarters, or on detached duty at the Station.					Effective Strength, exclusive of those sent or left at Home or in India.								
			Field Officers.	Captains.	Subalterns.	Staff.	Native Officers.	Staff Serjeants.	Serjeants.	Trumpeters or Drummers.	Farriers.	Rank and File.			Total Non-Commissioned Officers and Men.	Horses, including Officers' Chargers.
												Fit for Duty.	Sick in Hospital.	On Command.		
SAPPERS AND MINERS.																
No. 1 Company, Bombay	Antalo ..	1	..	..	1	..	2	1	2	2	..	66	8	19	98	1
„ 2 „ „	Lat ..	1	..	2	1	1	2	4	4	2	..	101	9	..	120	4
„ 3 „ „	Ashangi ..	1	..	1	..	..	1	2	..	2	..	102	6	8	120	1
„ 4 „ „	Ashangi ..	1	..	..	1	..	2	1	2	2	..	100	2	..	107	1
Head-Quarters and K Company, Madras ..	Marawah ..	1	1	2	1	1	2	..	9	2	..	105	..	..	116	6
G and H Companies, Madras	Zula & Kumayli	2	..	..	7	1	3	..	20	4	..	222	..	..	246	3
BRITISH INFANTRY.																
1st Battalion 4th Foot	Marawah ..	10	3	10	17	5	..	6	33	19	..	466	58	97	679	34
26th Cameronians	Senafè ..	10	3	8	15	5	..	7	35	17	..	486	33	236	814	21
33rd Foot	Lat ..	10	2	7	17	7	..	5	34	17	..	639	25	53	773	21
45th „	Ashangi ..	10	3	6	17	5	..	6	36	18	..	659	35	7	761	8
NATIVE INFANTRY.																
2nd Grenadiers	Kumayli ..	8	1	..	1	4	14	3	36	16	..	490	66	44	655	7
3rd Regiment	Ashangi ..	8	2	2	5	2	13	..	33	14	..	263	7	354	671	..
10th Regiment, Head-Quarters Wing ..	Lat ..	4	3	..	1	3	8	..	22	13	..	176	21	128	360	..
„ Left Wing	Senafè ..	4	1	..	1	1	7	..	14	4	..	135	8	98	259	..
18th Regiment	Zula ..	8	3	1	4	..	15	2	34	15	..	327	53	249	680	8
21st Regiment, Detachment	Senafè ..	1	..	..	..	..	2	..	6	2	..	49	3	..	60	..
21st Punjaub, Detachment	Undul Wells ..	8	2	2	..	2	15	..	38	15	1	694	14	..	762	6
23rd „ „	Ashangi ..	8	2	2	3	3	14	..	36	13	..	281	24	346	700	..
25th Regiment, Bombay	Adigrat ..	8	2	..	3	4	12	..	30	13	..	248	26	255	572	12
27th „ „	Marawah ..	8	2	1	2	5	15	..	36	16	..	375	116	7	750	8
Total	.. .. ..	146	39	60	136	69	187	59	672	243	23	7,594	596	2,774	11,961	2,353

The following Statement* shows the number of each Arm of the Service present in Africa on the 1st of May :—

Number of each Arm of the Service present.

Description of Force.	Field Officers.	Captains.	Subalterns.	Staff.	Native Officers.	Sergeants and Havildars.	Trumpeters and Drummers.	Farriers.	Rank and File.	Total Non-Com. Officers and Men.	Horses, including Officers' Chargers.
British Cavalry	2	2	5	3	...	11	3	3	186	203	236
Native Cavalry	6	6	11	9	57	173	21	16	1,525	1,735	1,800
Royal Artillery	..	7	15	5	..	35	8	3	406	452	161
Native Artillery	..	1	2	..	3	7	3	..	76	86	2
Naval Brigade	..	..	5	2	..	4	1	..	95	100	10
Royal Engineers	1	..	1	1	..	4	1	..	77	82	3
Native Sappers and Miners	1	5	11	3	12	45	14	..	748	807	16
British Infantry	11	31	66	22	..	162	71	..	2,794	3,027	84
Native Infantry	18	8	20	24	115	290	121	1	5,057	5,469	41
Total ..	39	60	136	69	187	731	243	23	10,961	11,961	2,353

Operations of the rear guard on return march.

The march from Talanta to Atsala was trying, from frequent severe storms of rain which appeared to accompany the columns, and from which the troops in some degree, and more especially the followers and transport animals, could not fail to suffer. The wild border-tribes of Abyssinians and Gallas, through whom the route lay from the Takazze to Atsala, being very little under the control of their distant, and almost nominal rulers, and who had been perfectly well behaved in the advance, finding by degrees the vulnerable points of the army, had been for some time making attacks upon the muleteers and camp-followers when they ventured far from their escorts, and on some occasions even on the armed soldiers. In the first instances some camp-followers were killed, and in the latter, the soldiers being driven to use their weapons, several Abyssinians and Gallas were killed and wounded. Considerable numbers of armed men, principally Gallas, watched the march from the hills, and, although restrained by the presence of the columns, made attempts on the baggage, but with little success. This was a clear indication of what a Force returning under difficulties would have experienced. In the friendly territory of Prince Kassai, the troops returned to marches made easy by improved roads and increased supplies of food, stored in the fortified posts of Antalo and Adigrat, and which were hailed as luxuries by the men who for so long a time had none but the bare necessaries of existence.

Camp followers killed.

Abyssinians and Gallas killed.

State of horses and mules.

The horses, mules, and cattle had suffered greatly from want of water during the six days that the Force was encamped in and about Magdāla. The supply on the mountains was, as before described, very limited for such a vast number; and all the animals had to be taken down to the Bashilo (8 miles) for water; it took them nearly all day to go there and back again, so that they did not benefit much by the process. Many of the animals scarcely got any water at all for the first two or three days, and Magdāla itself, and the mountains in its immediate neighbourhood, were covered with dead and dying animals and men; and the stench from these, and from refuse of all kinds, was sickening.

* Quartermaster-General's Return dated 1st May, 1868.

On the 18th April, the First, or, as it now became, the Rear Brigade, re-crossed the Bashilo, and re-ascended the tremendous precipices to the platean of Talanta. Whilst the troops rested on the Talanta Plain, the mules were fed and well watered for four days, a reserve supply of food having been collected here, and served out with a free hand. On the 23rd April, the Rear Brigade marched to Bethor, across the deep and difficult ravine of the Jedda—a severe and trying march for the troops, heavily weighted and suffering from reaction after excitement, hard work, and the insufficient food of the past three weeks. By starting the advance at daylight, the Rear Guard got into camp at 9 P.M. On Sunday, the 26th, the Rear Brigade descended to the Takazze—another heavy march—and the Rear Guard were out all night. As the mules were now beginning to break down in large numbers, the delays along the road became more frequent. At the Takazze, the brigade halted one day to rest; and signs of exhaustion and weakness were visible, from continued hard work, insufficient and bad food, and total deprivation of stimulants of all kinds for the past five weeks. The brigade arrived at Dildi, after a long and harrassing march, on the 29th. The Rear Guard was again out all night. Here the clothes and tents, which had been left behind, were obtained; but although the comfort of the troops was greatly increased thereby, the line of baggage became longer, and the difficulties of the march much greater. On the 1st May, the Rear Brigade arrived at Marawah—a long march over a narrow path, winding over a succession of hills. The Advance arrived at 1·30 P.M., but the Rear Guard did not arrive until late on the morning of the 2nd; and many of the baggage animals were 24 hours under their loads, without forage or water. A halt and the loss of a day was the consequence. The difficulties of the return march now became very apparent; the animals were becoming weaker, sore backs became more frequent daily, and the loss of animals increased alarmingly.

Talanta.

Jedda ravine.

Takazze.

Break down of mules.

Dildi.

Marawah.

Difficulties of return march.

Here Lieutenant-Colonel Bray 4th (King's Own) Regiment, was nominated to the continuous command of the Rear Guard, with full powers of dealing with all difficulties. He was authorized to put to death all marauders taken red-handed in the act of plunder or attempting to plunder the line of baggage. He could also punish all soldiers or camp followers delaying the line of march, or disobeying orders; and a couple of drummers were attached to his guard for the purposes of carrying out his summary sentences on the spot. Lieutenant-Colonel Bray had already had the experience of the campaign in Affghanistan in 1842, where the rear guard and picquet duty was very severe, where the country was also mountainous and most difficult, and where we had a bold, active, and enterprising enemy contesting our advance or retreat; therefore the duties he commenced at Marawah were not quite new to him. His experience gained in the Affghan war was most valuable, as every Captain and Subaltern in that campaign was constantly in command of a company or picquet detached from the main body; and had the best opportunity of learning every description of outpost, advance and rear guard and picquet duties in the presence of an active enemy, who disputed every mountain and difficult pass with our troops, and whose attacks were always bold and harassing on the Rear Guard, especially after sunset, and when the Rear Guard was benighted—a very common occurrence in Affghanistan, on account of the enormous baggage train, which was never successfully cut down to its proper dimensions.

Lt.-Colonel Bray nominated to command Rear Guard.

Experience of Affghan campaign.

When the column left Marawah on 3rd May, the baggage train could not be cleared off the ground for several hours, on account of the contracted nature of the ground. All the mules and horses which could not move off the ground were shot; and the ammunition which could not be removed (about 100 mule loads), was blown up.

When the Rear Guard commenced to move, they got on but slowly, as they found

Departure of rear brigade from Marawah.

Arrangements of Rear Guard.

Baggage destroyed.

Spare mules for sick.

the road strewed with mules unable to move, and baggage, tents, provisions, and stores of every kind lying along the road. In rear of the picquets, marched the spare mules in charge of officers of the Transport Train; and in rear of all, marched a company of Infantry, under a Captain, with strict orders to leave nothing behind him. For the first week, some of the mules were so overladen that they broke down; their loads were opened out, and everything not absolutely valuable was set fire to or thrown down the precipices. These strong measures soon produced satisfactory results; the quantity of baggage destroyed in the first three days was great, both on the camp ground and along the road. The spare mules were kept for the sick, who increased every day, and who threw themselves down on the roadside and remained there until the Rear Guard came up.

For the first week, and while the Rear Guard were in the mountains amongst hostile tribes who hovered about the line of march in considerable numbers, and sat in groups on the hill-tops and watched its slow progress, it was necessary to be very vigilant. The Rear Guard were loaded, and the men along the line had orders to fire on any Abyssinians attempting to plunder or obstruct the march; this was done in many cases promptly, and there can be little doubt that the bold front displayed, and the readiness exhibited to fire, prevented much annoyance and disaster. The destruction of all baggage that could not be carried also prevented many marauders following the Guard for plunder. Had the Force been followed by a more active and determined enemy, picquets would have been necessary at all the commanding points along the line; but the greater portion of the Infantry employed as armed muleteers were found sufficient protection.

Captain Holland's Report of 12th May.

"The Commander-in-Chief, with the Rear Brigade, arrived at Antalo on the 12th "May. At this date, the last returns received of the Transport Train showed that the "corps now mustered 7,417 camels, 12,920 mules and ponies, 5,894 pack bullocks, "1,139 draught bullocks, 827 donkeys, 305 mule carts, and 391 bullock carts.

Strength of the Land Transport on the 12th of May.

"44 elephants were landed in Abyssinia from Bombay, and proved most useful in "carrying four of the 12-pounder Armstrong guns, with limbers, carriages, ammunition, "&c., from Antalo to Magdāla, and also in conveying from Zula to Magdāla two 8-inch "mortars, with beds, ammunition, &c. Two of these elephants died from exhaustion, "owing to being deprived of their proper forage, and having to proceed so far for water,

Elephants.

"near the Bashilo, after the fall of Magdāla, and three others died at Bulago, about 150 "miles from Magdāla, on their return march. As the Armstrong battery from Antalo "proceeded in draught to Zula, most of the elephants were relieved of their heavy "loads, varying from 800 to 1,600 cwt., and proceeded unladen.

Mules.

"8,174 mules and ponies were, on the 12th May, on duty with the Highland Train, "of which 2,072 were reported sick. The sick in the Lowland Train, according to the "last reports received were 1,226 mules and ponies, 865 bullocks, and 811 camels.

Camels, bullocks, and donkeys used on return march.

"From Zula, 2,410 camels, 2,100 pack bullocks, 830 donkeys, and 420 mules had "been despatched to meet the Army on its return march, and to assist in removing all "stores that had been collected on the highlands.

"The following is a list of the animals that had been purchased at Berbera, and the average prices paid for each:—

Prices paid at Berbera for animals.

	Rupees.	Annas.	Pies.
"2,121 Bullocks, rate per each	57	14	6
"154 Donkeys, „	6	5	0
"3 Ponies „	51	10	8

"The Lowland Train had been steadily working from Zula to Adigrat, carrying

" Commissariat supplies, ammunition, treasure, and other stores for the Force. From " Adigrat to Atsala those stores had been carried by Abyssinian transport, except in the " case of boxes, treasure, and ammunition, which had been conveyed by the mules of the " Highland Train, the native carriers having as a rule agreed only to carry such stores " as were packed in bags. The greater portion of the Highland Train had, under the " direction of Captain Hand, 82nd Regiment, accompanied the Army to Magdāla, " carrying all stores from the point at which native carriers were not obtainable on to " the camp before Magdāla. The mules of this train had also carried all the tents, " stores, and ammunition of the Army, with which they marched, and were at this time " engaged in conveying back all the tents and baggage of the troops, as well as " Commissariat stores and ammunition found at all the depôts on the line of march. Duties of Highland and Lowland Trains.

" Transport Train Staff Officers had been for some time located at Kumayli, Senafe, " Adigrat, and Antalo. These officers examined all convoys of mules passing through " their stations, replaced those that were galled or sick by efficient mules, supervised all " Transport Train arrangements, feeding, watering, &c., and were in general charge of all " Transport Train stores. They had been for some time authorized to purchase for the " Train, with the approval of a Board of Officers, any Abyssinian mules suitable for " army purposes. Under this arrangement several hundred mules had been purchased. " Sick depôts for mules had been established at Kumayli, Focada, and Atsala (near " Antalo). The two latter depôts, however, were only used for mules likely to be " fit for service in a short time, all bad cases being sent down to Kumayli. Orders " were now issued sanctioning the disposal, by General Officers, of such mules as were not " likely to be available for work for many months, as presents to friendly Chiefs or " heads of districts and villages who had rendered the Army assistance in every way in " their power. Transport Train Staff Officers at Kumayli, Senafe, Adigrat, and Antalo.

" A Transport Train officer invariably accompanied every convoy of animals belong- " ing to the Train, and on arrival at the station to which the convoy was ordered to " proceed, he submitted a report direct to Head-Quarters regarding the journey, pro- " visions issued to the animals, the state of the animals on their arrival, and all other " particulars he considered necessary regarding that portion of the Train under his " charge. An Officer to accompany each convoy.

" All regiments and detachments leaving stations on the highlands for the front had " been provided with rations for 15 days, and Transport Train mules had been attached " to corps for the conveyance of these stores. As these rations were consumed, the " mules were placed at the disposal of the Commissariat Officer for the carriage of " local purchases, officers commanding regiments and batteries were held responsible that " the mules attached to their respective corps were properly watered and fed. Transport " Train officers being responsible for all matters connected with equipment and interior " economy of the Train, and for the discipline and rationing of the muleteers, for this " purpose a Transport Train officer was always, when available, attached to each corps. " 5 per cent. spare mules were attached to the rear guard of each column, for the purpose " of replacing broken-down animals, picking up baggage, &c., in addition to the number " of mules required for the conveyance of foot-sore soldiers. These arrangements were " found to answer well. Mules attached to regiments for conveyance of rations. Responsibilities of Regimental and Transport Train Officers.

" The railway from Zula towards Kumayli had been completed to within a distance of " three-quarters of a mile of the latter station, and a terminus made at this point. The " amount and condition of the rolling stock necessitated this arrangement. The whole being " required for Commissariat purposes, no trains could be spared for carrying railway plant. " The platelayers and workmen were now distributed in efficient gangs over the whole line, Railway completed.

"the maintenance of which was carefully attended to. The Commanding Engineer "reported that at least six miles of the line would not repay removal, the plant having "pretty well done its work before being sent to Abyssinia, and as the whole line "would be required until the very end of the embarkation, when the weather would "become extremely hot, it was arranged that the remaining five miles of fair rails should "be left on the ground, and if considered worth removal, a party sent from Aden the "following cold season to take them away. The locomotives received from India were "old and worn out, when landed in Abyssinia, and would be of little value in India.*

Photographers.

"The photographers had availed themselves of many opportunities on the return "march of taking views of the country passed through.

Water supply.

"Lieutenant Le Messurier, R.E., the officer in charge of the water supply, had at the "request of the Commanding Engineer been ordered to Kumayli to make arrangements "for watering the force, baggage animals, &c., which were to be collected in large "numbers at that station prior to embarkation at Zula. Water-pipes were laid from "Kumayli to the railway terminus. 420 tons of water could now be stored at Zula in "tanks, and arrangements were made to add storage for at least 200 tons more.

Storage at Zula.

"The consumption of water at Zula now was about 100 tons per diem. This consumption "might, however, have been reduced by limiting the quantity of water as before to "1½ gallon per man per diem.

Trigonometrical Survey.

"The following work had been completed by the Trigonometrical Survey party:—

"1. Base lines measured at Zula, Senafé, Antalo, Ashangi, and Magdála.

"2. Triangulation with 7-inch theodolite in the vicinity of the above-named base "lines which were connected with each other by a traverse from Ashangi.

Detail of work performed.

"3. A traverse from Zula to Magdála, showing the positions of camps, roads, rivers, "and villages; and

"4. Survey by plane table from Zula to the camp in Marawah.

	Distance in Miles.	Square Miles of Country.
Zula to Senafé	64	1,100
Senafé to Antalo	128	3,100
Antalo to Ashangi	54	700
Ashanghi to Marawah	25	380
Marawah to Magdála	108	..
Total	379	5,280

"5. A complete survey of the country surrounding Magdála.

"6. The latitudes of seven places, the southernmost being Lake Ashangi, and the "longitudes of Mulkutto and Senafé, were fixed by observation. Latitudes and "longitudes of all principal stations from Zula to Magdála by traverse.

"7. Heights by boiling point of all stations along the line of route.

"A compass survey of the route marched by the Army from Zula to Magdála, with "longitudinal sections and a survey of the country round Magdála, had been executed by "the Quartermaster-General's Department.

* They were eventually, however, re-shipped and sent off to Bombay.

"The arrangements made for carrying the post had answered well. The post now "took four days in transit from Zula to Antalo. The detachments told off on postal "duty rejoined their respective regiments of the Rear Brigade on their return march, "as they passed through the stations at which they were located. Postal Department.

"The road from Zula to Senafè had been completed and made practicable for carts "by the 1st of February. The road from Senafè to Antalo had been made passable for "field artillery in draught. All the work on these roads was completed by Sappers and "Miners, and working parties from the Infantry, prior to the advance of the main body "of the Force. From Antalo to Magdàla the road was cleared by the troops on the "march, and made practicable for laden elephants. Roads and approaches.

"All these roads were in fair order till the monsoon set in, and, though difficult "for laden animals to pass over on account of the steep and precipitous mountains and "generally rugged nature of the country traversed, were sufficiently cleared to enable the "Force and its transport animals to march over them.

"Early in May, heavy rains fell all over the country between Magdàla and Zula. Heavy rains. "The rains did not injure the mountain tracts between Magdàla and Senafè beyond "making them very slippery and difficult for laden mules to travel over, but telegrams "had been received from Zula and Senafè reporting very heavy thunderstorms on the Thunder-storm. "4th and 6th May in the Pass, and a telegram, dated Senafè, the 7th, reported the road "from Upper to Middle Suru, except at a few spots, totally destroyed by flood on the "6th, and that 1,200 men would be required to work 10 or 12 days to remake it passable "for carts. Working parties were immediately employed on this road, and it was reported Flooding of Suru Pass. "practicable for mules on the 11th of May. The 1st, 3rd, and 4th Companies of "Bombay Sappers and Miners were now on their march to Senafè to repair the road in "the Suru Pass, and the G and H Companies of Madras Sappers had left Zula for "Suru for the same purpose. All available troops were also being employed as working "parties to repair the damage.*

"A Report, dated the 2nd May, had been received from Major-General Russell, "commanding at Zula, stating that that officer had then just completed a tour of inspec-

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* The following telegrams were received during the month of May by the Quartermaster-General's Department at the Head-Quarters of the Force, relative to the flooding of the Suru Pass :— Telegrams reporting flooding of Suru Pass.

From the Officer Commanding at Zula.—"*4th May*, 1868.—Please inform the Commander-in-Chief that "heavy rain has fallen in the Pass, and the road is much cut up. The Commanding Engineer has been "communicated with, in order to its immediate repair."

From the Commanding Engineer at Zula.—"*4th May*, 1868.—Weather very threatening. The Senafè "Pass has been flooded at Undul and Suru, and the cart road destroyed. Sappers and Miners much required "for the Pass."

From General Russell at Zula.—"*9th May*, 1868.—The Pass is much damaged, but in communication "with Colonel Wilkins arrangements are being made for keeping it open; unless heavy storms occur daily, "there is every probability of the Pass being kept open."

From General Stewart at Senafè.—"*9th May*, 1868.—Road from Higher Suru to Middle Suru, except at a "few spots totally destroyed by flood yesterday; road destroyed from Middle Suru, nearly one mile towards "Lower Suru. Will take four or five days to make road passable for mules, and will require at least 800 men "for carts. Road must be entirely re-made, and will take 10 or 12 days and 1,200 men."

From General Malcolm at Senafè.—"*21st May*, 1868.—Antalo garrison detained at Suru by state of the "Pass. General Collings hopes to get through to-day, but much work is required. Private information states "the Pass to be in a very bad state, the torrents being deep."

From General Malcolm at Senafè.—"*21st May*, 1868.—General Collings telegraphs, 'I have just marched "'down the Pass, the road just passable for animals. No delay should be made in the highlands. Suru is

Report on stations in the Suru Pass.

"tion of the different posts between Zula and Senafé. Major-General Russell reported "that he found Kumayli, though very extended, in good order, and the transport lines "clean and well ventilated, no filth in the vicinity, and nothing offensive; the arrange- "ments for the supply of water excellent, the pumps good and in good order; the "arrangements for watering animals well regulated, and the water abundant, and equal "to the supply of 16,000 animals; the road up to Suru on the date of the report was "in good order, the arrangement at Suru very good; the lines neatly laid out, and "order and system well maintained, the supply of water ample; a tent and a signaller "had been placed at Lower Suru, so that if a flood came from above, intimation "by wire might be sent to prevent the up-coming convoys entering the narrow pass. "Major-General Russell further reported that he found the station of Undul Wells kept in "very nice order; the water supply was found to be limited, but arrangements were "being made to sink another well. At Rahagedi everything was reported well- "conducted, the lines neat and clean. The report also stated that spots as secure as "could be found had been selected at the different posts in the Pass, and barriers for "protection made in case of flood.

Buildings and piers at Zula.

"Hospitals, storehouses, pendalls, and officers' quarters were built, or in course of "construction at Zula on the date of the capture of Magdala. Arrangements were also "on that date being made for hutting in the troops at Senafé and Adigrat. Three "piers had been constructed at Zula, and had been in use for some time. Hutting "operations at Adigrat were now stopped, as also at Senafé. Except in the case of "hospital accommodation, the buildings at Zula were required in order to give cover "and protection from the sun to troops on the eve of embarkation. The piers were also "in use till the very end. The Commanding Engineer was of opinion that it would "not be worth the time it would take to draw the piles of the piers. The floorings, "however, were to be removed and shipped off for Bombay.

Proposals regarding disposal.

"All hutting material of teak not put up, the Engineer park, and Engineer "stores, were being shipped at Zula, and arrangements were being made to ship off all "articles belonging to the Engineering Establishment at Zula not absolutely required "for the troops, as well as all Ordnance and Commissariat stores, so that the shipment of

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"'dangerous, from falling stones, and the animals are not safe in the floods; each repair of the Pass is more "'difficult than the last.'"

From Captain Hodges, Transport Train, at Zula.—"22*nd May*, 1868.—Road as far as Suru in good order; "from Suru to Lower Suru very bad, impracticable for carts."

From Captain Blakeney, Commanding at Suru.—"23*rd May*, 1868.—Sappers and 100 men Army Works "Corps working defile. Blasting rocks where most needful; 150 more men Army Works will be at Lower Suru "this evening under Lieutenant Rule, R.M.A., F.E.; all will (D.V.) be well. No rain since flood of 19th at "Suru. Flood came down at 5 P.M. on that day. Loss of animals, 17; loss of life, seven natives. Three "carts were washed down the Suru Defile. Road safe, will be ready for carts to-morrow night, if no flood "comes."

From the Officer Commanding at Rahagedi.—"26*th May*.—Very heavy rain yesterday afternoon; road "after the descent from Senafé much cut up; water a foot and a half deep; ran off in about three hours. I "had to send as many as a dozen men to help one cart. A few men under an Engineer could in two or three "hours make the road practicable for carts."

From the Officer Commanding at Rahagedi.—"25*th May*, 1868.—Flood coming down the Pass from Senafé 'direction."

From Officer Commanding at Senafé.—"26*th* May, 1868.—Road from bottom of Senafé to ghát impassable "for carts."

"these stores might not in any way interfere with or impede the embarkation of the "troops.

"At Antalo, arrangements were made for the return of the Force to Senafé. As soon "as the pioneer force, under Major Chamberlain, reached Antalo, the garrison of Antalo "moved to Zula. The portion of the force in rear of the pioneer force was divided into "five columns, and moved on Adigrat and Senafé. The 1st column left Antalo on May "11th; it consisted of the 3rd Regiment of Sind Horse, the 10th Bengal Cavalry, the B "Mountain Battery, the 3rd and 4th Companies of Bombay Sappers and Miners, and the "Head-Quarter Wing of the 23rd Punjab Pioneers. The 2nd Column left Antalo on May "12th; it consisted of the 12th Bengal Cavalry, one wing of the 33rd Regiment, and one "wing of the 23rd Punjab Pioneers. The 3rd Column marched from Antalo on May 13; "it consisted of the Armstrong Battery, the Mortars, the Head-Quarters of the 33rd "Regiment, and the K Company of the Madras Sappers. The 4th Column marched "on the 14th; it consisted of the 3rd Bombay Light Cavalry, Penn's Mountain Battery, "the 2nd Company of Bombay Sappers and Miners, the Head-Quarter Wing of the 45th "Regiment, and the Head-Quarter Wing of the 10th Native Infantry. The 5th Column "marched on the 15th; it consisted of the 3rd Dragoon Guards, the Naval Brigade, the "10th Company Royal Engineers, the 4th (King's Own) Regiment, and the Beloochees. "The Head-Quarters of the 1st Division marched with the 4th Column, while the Com- "mander-in-Chief and Head-Quarters' Staff accompanied the 5th Column. Each column "took 10 days' rations with it from Antalo, and one from Adigrat.

Return of the Force from Antalo.

Division of the Force into five columns.

Marching arrangements.

"The sick of the European and native troops in the Depôt Hospitals at Antalo "joined their respective corps on arrival there. The Native General Hospital at Antalo, "under Surgeon-Major Maitland, with sick followers, &c., accompanied the Antalo "Garrison on its march. Surgeon-Major Wyllie's Field Hospital, with the wounded, "accompanied the 2nd Column, 1st Division, to Senafé. The European Depôt Hospital, "at Antalo, accompanied the 3rd Column, and Surgeon Straker's Field Hospital marched "with the 4th Column, and Surgeon Madden's Field Hospital accompanied the 5th "Column.

Hospital arrangements.

"Twelve camels, with riding saddles for foot-sore men, accompanied the Antalo "Garrison, and the same number of camels, with riding saddles respectively, marched "with the 1st, 2nd, 3rd, and 4th Columns; 28 riding camels, with saddles, accompanied "the 5th Column.

Arrangements for carrying sick and wounded.

"Arrangements for carriage for the sick and wounded, and hospitals and establish- "ments, were made in accordance with the recommendations of Dr. Currie, Inspector- "General of Hospitals.

"On the day of the arrival of the 1st Column at Adigrat, the Adigrat Garrison "marched on Senafé, and the troops generally as they arrived at Senafé were moved on "to Kumayli for embarkation at Zula.

"The 10th Bengal Cavalry was ordered to Zula at once for embarkation, and "arrangements were made to move all Cavalry regiments to Zula for early embarka- "tion, in order that the vessels conveying them to India might reach their destination "without encountering the heavy gales of the monsoon.

Cavalry ordered down for embarkation.

"The Head-Quarters Wing of the 5th Regiment Native Infantry arrived in Zula after "the capture of Magdala, and was sent back the next day to Bombay. The ships con- "veying the remaining wing of this regiment, and the 8th Regiment Bombay Native "Infantry, were sent back to Bombay from Aden. A wing of the 10th Regiment Bombay "Native Infantry, and the company of the Bombay Marine Battalion, located at Senafé, "left that station on the 6th May for embarkation at Zula on the 10th.

Embarkations.

"The 26th Regiment (Cameronians) which, 845 strong, had arrived on the 30th and "31st March, the 5th Battery 25th Brigade Royal Artillery, and 1st Company Native

26th Regiment, 5th Battery 25th Brigade R. A.

"Artillery, were under orders to embark for Bombay on the 15th, and a portion of them "left Senafè on the 10th for Zula.

"The 18th Native Infantry embarked at Zula on the 11th May, and sailed for "Bombay the following day.

1st Company Native Artillery.

"The 2nd Bombay Native Infantry and 21st Punjab Native Infantry embarked "as soon as relieved by the 3rd and 25th Regiments Bombay Native Infantry.

2nd and 18th Bom. N.I.

"Transports for these troops had already been watered and provisioned, as well as "those for the conveyance of all the Cavalry corps.

Conservancy arrangements.

"Orders were sent for efficient conservancy arrangements in the Suru Pass, while "the troops were marching through. Standing camps were pitched at the several stations "in the Pass, and arrangements made so that troops passing through might have their "meals ready cooked for them on arrival.

Stores.

"All stores on the highland that could be spared had already been sent from stations "to Adigrat and Senafè *en route* to Zula.

Number of Transports at Zula.

"At this time, 77 sailing-vessels in Annesley Bay were ready to carry men and "animals, as also 26 steamers to carry troops, capable of towing, besides tug vessels.

"Four of these 26 steamers were kept at Zula till the last, as condensers.

"A large amount of tonnage was also available for stores, and altogether there was, "at the termination of the campaign, enough tonnage to move the whole Force with "horses, elephants, stores, and 5,000 mules.

Zula Hospital.

"The hospitals at Zula had already been cleared of their sick, and each Depart-"ment had already sent off every man whose services were not actually required. Vessels "allotted to particular regiments were moored as near as possible to each other, and in "fact every arrangement was made to ensure the embarkation of the Force in the "shortest possible time."*

The Commander-in-Chief at Antalo, on the 12th May, received by telegraph and published in General Orders, the following messages:—

Message from the Queen.

From the Queen.—"The Queen sends hearty congratulation and thanks to Sir "Robert Napier and his gallant force on their brilliant success."

Message from the Duke of Cambridge.

From the Duke of Cambridge.—"We all rejoice in your great success, and in that "of your gallant and enduring army."

Message from the Sec. of State.

From the Secretary of State for India.—"I congratulate your Excellency with all "my heart; you have taught us once more what is meant by an army that can go any-"where, and do anything. From first to last all has been done well."

Circumstances having rendered it impossible to supply the proper quantity of horse rations, the Commander-in-Chief ordered that the rate chargeable to officers for rations supplied for their horses should be 8 annas per diem per horse, from the 15th April, 1868, pending sanction for further retrospective effect.

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* Extracted from Report furnished to the Horse Guards by Captain Holland, Assistant Quartermaster-General, dated the 12th of May, 1868.

The subjoined extract from a letter from the Government of India to the Government of Bombay as to the replacement of casualties (caused by epidemic) among the horses of the native commissioned and non-commissioned officers and rank and file of the Sillidar Corps was published for information:—

Compensation for Cavalry horses.

"The Right Honourable the Governor-General in Council sanctions the horses being "replaced, on the condition that the Chunda Fund make good the depreciated value "consequent on age of the horses which have died, viz., that the original value "be assessed at the Regulation cost of Rs. 200, and a deduction of 10 per cent. for "every year of age above four years be made and credited to the Imperial Government, "which would then be charged the actual cost of the remounts supplied to replace the "casualties."

Invaliding Board assembled at Zula.

A Permanent Medical Invaliding Board was ordered to assemble at Zula, for the purpose of reporting on the state of health of all British soldiers on board the hospital ships; and all sick belonging to regiments and batteries under orders for England who were considered unable to endure the fatigues of the overland route, were sent home *viâ* the Cape, as well as of all men belonging to the 5th Battery 25th Brigade Royal Artillery, 26th and 45th Foot, who might require change of climate, to Europe.

Sick ordered on hospital ships.

Officers Commanding British regiments and batteries *en route* to Zula were directed on arrival at that port, to send on board the hospital ship all sick men who, in the opinion of the Regimental Medical Officers, were either unable to go by the overland route should the corps be proceeding to England, or who required change of climate to Europe. Should the corps be returning to India, care was to be taken that each man ordered to proceed to England, *viâ* the Cape, was provided with documents to show up to what date he had been paid, as also the nature of any claims he might have to make.

The necessary discharge documents of all men belonging to corps returning to India were to be prepared as soon as practicable, and forwarded to their respective depôts.

Gratuitous issue of boots.

In consideration of the hard marching performed by the Advanced Brigades, the Commander-in-Chief sanctioned a gratuitous issue of one pair of boots to every soldier and public follower who had accompanied his corps beyond Antalo.

Board assembled to report on horses.

A Board of Officers, experienced in the care and management of animals, assembled at Zula, for the purpose of inspecting and reporting on the state and condition of all horses, mules, and other animals proposed to be embarked for Bombay; and no animal was allowed to be put on board ship that was found too weak, old, lame, or diseased, to sustain a sea voyage.

Antalo evacuated, 15th May.

On the 15th of May, the rear of the Force evacuated Antalo, and marched to Eikullet, where a letter was received from Ras Guksa, the elder brother of Kassai, Prince of Tigré, requesting permission to visit the Commander-in-Chief. Being duly invited, he arrived, and was told that some munitions of war would be presented to Prince Kassai at Senafè. At Eikullet, the widow of King Theodore died in the British camp, from disease of the lungs. She had received every comfort that it was possible to afford her. Her body was attended by a guard of honour and was buried by the priests of the Abyssinian creed in the church of Chelikot. Her son remained with the Commander-in-Chief, and subsequently accompanied him to England.

Death of Theodore's widow.

Arrival at Adigrat.

On the 21st May the Commander-in-Chief reached Adigrat. Here the 2nd Division of the Force was broken up from the date of the 4th Column reaching Senafè, and all troops then remaining in the country were considered as belonging to the 1st Division.

2nd Division broken up.

The Staff of the 2nd Division (Divisional and Brigade) at once embarked for India.

The 2nd (or Lieutenant-Colonel Milward's) Division of Royal Artillery was also broken up from the date of arrival at Senafè of Lieutenant-Colonel Wallace, who then assumed the command of all Artillery remaining in the country.

Cavalry brigade broken up.

The appointments of Brigade-Majors and all other Staff connected with the Cavalry ceased from the 24th May, the date appointed for the embarkation of the first Cavalry regiment for India.

Arrangements for volunteering from regiments ordered to England.

Non-commissioned officers and privates belonging to the 3rd Dragoon Guards, A-21 Royal Artillery, B-21 Royal Artillery, 4th Foot, and 33rd Foot, under orders for England, were permitted to volunteer for further service in India.

Column or Station Committees were assembled to receive the names of all such volunteers, nominal rolls of whom were sent in to the Deputy Adjutant-General. The Committees examined the Defaulter Sheets of all men volunteering, and rejected any whom they considered from that record to be decidedly bad characters. Every man was also examined medically, and none allowed to volunteer who were pronounced unfit for further service in India. The Committees explained to those anxious to volunteer that, in the absence of instructions from India, they could only be permitted to volunteer for general service; on arrival at Bombay, however, they would have the usual privilege of selecting the regiment they wished to proceed to from amongst those that would be named in the General Orders.

Officers' horses purchased by Government.

The Commander-in-Chief sanctioned the purchase for the public service of any horses, the property of officers or gentlemen attached to the Force, that might be pronounced by a Committee suitable for Artillery or Cavalry purposes.

The Committees ordered to assemble at Senafè and Zula for the inspection of all animals the property of Government, previous to embarkation, were authorised to purchase all such horses as might be offered for sale, subject to the approval of General Officers Commanding. The sum given for such horses was in no case to exceed the remount price laid down by Regulation.

The embarkation of the troops having commenced, the number of officers attached to the Land Transport Train was ordered to be reduced as opportunity offered.

Arrival at Senafè.

Review in honour of the Queen's birthday.

Durbar at Senafè.

On May 24th, the Commander-in-Chief reached Senafè, where, on the 25th, a review of the troops was held in honour of Her Majesty's birthday. Prince Kassai was present, and in the afternoon paid the Commander-in-Chief a private visit. The following day a durbar was held, at which Kassai was received with a salute, and at which he was informed that some arms and ammunition were about to be presented to him. Sir Robert Napier impressed upon him that the weapons were designed solely to aid him in the defence of his own country, and not in the invasion of that of his neighbours. On May 28th, Kassai reviewed his troops, and, leading his horsemen himself, made them, to the number of 2,000, perform various movements, consisting chiefly of *furious* charges and personal tilts. The British Army had released four chiefs of Tigré from Magdala, and brought them to Senafè. These were introduced to Kassai, and took an oath of allegiance to him on the Gospels—Kassai, in his turn, swearing that he would accord them his protection. He requested afterwards, in a private audience, that two or three Europeans might be left behind for three months, to teach his soldiery the use of their new weapons; but to this Sir Robert Napier replied, that the soldiers belonged to the Queen of England, and could not be left behind without her special orders, but that any of the men of Tigré whom Kassai would send to Aden, could there be taught how to use their guns.

Presents to Prince Kassai.

The presents bestowed upon Prince Kassai were a recognition of his friendly services towards the Expedition. Through the failure of the Land Transport Corps, Sir Robert Napier found himself, at the outset of the campaign, compelled to look to local resources for the supply of transport and commissariat requirements to an extent which he had not intended, and which these resources proved very inadequate to meet.

All that could then be done was to develop to the utmost such sources of supply as were within reach. It must be remembered, that the delay of a fortnight, or even less, might have made the difference between the campaign being terminated before the rains or not. Owing in part to the ravages of locusts, the resources of Abyssinia had fallen so low that special efforts were necessary before it was possible to purchase even the little food that it contained. This was one of many reasons which made it desirable to establish friendly relations with Prince Kassai. Such relations were established at his first meeting with Sir Robert Napier, near Adabaga. During the second interview, at the same place, the Commander-in-Chief saw that the grain, which the Prince had on the previous day promised to collect, would be furnished with all the more certainty if he had cause to expect some tangible acknowledgment of his services; he therefore informed him that if he proved himself a true friend of Her Majesty, he would be presented with the means of defending himself against his enemies; and that, although no promise could be made, it was hoped that guns suitable for mountain warfare might be given him by the Queen of England. Large quantities of grain, to the value of about 10,000 dollars, were soon afterwards sent as a gift to Sir Robert Napier by the Prince himself, at a time when every load of flour was of great value; and the far more important supplies which, with his help, the Commissariat was able to purchase in the province of Enderta, during the halt at Antalo, enabled the force to advance beyond that position. The assurance, therefore, which Sir Robert Napier conveyed to Kassai, near Adabaga, was as fully justified by the result as it appeared expedient at the time. The cordiality and completeness, moreover, with which Prince Kassai, although pressed by Turkish intriguers to oppose the British advance, entered into the views of the British Commander, by appointing some of his confidential chiefs as commissioners with the commanders of our troops in Tigré, tended greatly to secure peaceful intercourse with the people.

Good effects of Kassai's friendly relations.

Object of of presenting Kassai with arms.

There is, however, another view of the subject which must be mentioned. The best hope of Abyssinia enjoying peace lay in the partition of its provinces between at least two distinct rulers. Many circumstances, independently of the great extent of the country itself, and the geographical barriers which subdivide it, support this view. Any attempt on the part of one chief to take possession of all Abyssinia would not only lead to a long civil war, but to a continuance of anarchy and disorder, if his objects were attained. When the positions of the two chiefs who govern Tigré and Lasta are considered, it does not appear likely that Kassai will ever attack Gobaze, while it is only too probable that the ambition of Gobazé will extend itself to Tigré. Indeed, one of the motives of the latter in not coming to meet the British General appeared to be a fear lest that the latter might require from him a promise that he would not invade Tigré, which promise he was not prepared to make, or at all events to keep, and he feared that he might afterwards incur the resentment of England by breaking such stipulation if made.

The four Tigréan Chiefs who had been released from Magdala had enjoyed influence in their own province under a former dynasty. Had they not been restored to their homes, they would have been exposed to the danger of destruction by the Gallas, or have been driven to seek a refuge with Gobaze, who would have found them useful agents in any designs against Kassai. They were accordingly taken back to Tigré; but it was apparent that, though this course involved the lesser of two dangers, it might in the end prove a source of trouble to Prince Kassai. All that could be done towards securing their allegiance was done. At Senafé they solemnly took oath, before the Prince, that they would be faithful to him; and Kassai as solemnly promised, in return, to afford them his protection. But this ceremony might or might not have the effect of restraining them from intrigues against him. Therefore, as the British restored them

to a place in his dominions, they were bound to strengthen him against insurrection on their part. Had we left a ruler whom we had found just struggling into power, and whose first use of that power had been for our assistance, exposed to pressing dangers, when we could materially add to his means of self-defence by a gift, which was as nothing compared to our own resources, we should have adopted a course foreign to the characteristic policy of our country towards weaker States, even if hopes of the acknowledgment of his services had not been held out to him.

List of Ordnance, &c. presented to Kassai.

Consequently, when Sir Robert Napier arrived at Zula, the Field Commissary of Ordnance was authorised to issue Enfield rifles to the 3rd and 25th Regiments Native Infantry, to replace their smooth-bores given to Prince Kassai, and the undermentioned ordnance, small arms, and ammunition were presented to him:—

6 five and a half inch mortars, with 200 rounds of ammunition per piece, and small stores complete, with 14 sets of mule harness.
6 four and two-fifths inch howitzers, with 50 rounds of ammunition per piece.
180 sets of saddlery.
725 muskets, ·656 bore.
130 fuzils, ·656 bore.
1,650 lbs. powder, Ordnance, Bombay.
349,000 rounds ·656 musket ammunition.
2,000 do. ·67 Cavalry carbine ammunition.
1,000 do. Sinde Horse pistol ammunition.
2,200 do. ·67 pistol ammunition.
30 do. of gun, Armstrong, 12-pounder ammunition.
585,480 caps, percussion, with a due proportion of packing material.

The following is a list of the articles of Commissariat stock made over to Prince Kassai:—

List of Commissariat stock handed over to Kassai.

Names of Articles.	Number or Quantity.	Names of Articles.	Number or Quantity.
From Senafe Depôt.		*Dead Stock.*	
Biscuit .. .. bags	2,000	Empty bags, canvas .. .. bales	32
„ .. .. barrels	80	Grindstones .. .. .. number	92
Rice .. .. bags	3,888	Beam scales .. .. .. sets	4
Flour (barrels 400, bags 900)	1,300	Horses' shoes .. .. .. boxes	4
Flour, 1st sort .. .. .. boxes	20	Tinning materials .. .. „	4
Sugar .. .. bags	380	Pickaxes .. .. .. number	30
Wheat .. .. „	96	Shovels .. .. .. „	30
Grain .. .. „	700	Steelyards .. .. .. „	8
Preserved potatoes .. .. box	1	Buckets, zinc .. .. .. „	20
Onions .. .. bags	50	Lanterns .. .. .. „	12
Oil cans .. .. .. cans	2	Crowbars .. .. .. „	6
Lime juice .. .. .. kegs	8	Weights, iron, from 56 lbs. to 14 lbs. .. .. .. sets	4
Porter .. .. hogsheads	9	Pumps, copper .. .. .. number	15
Compressed forage .. .. bales	181	Dales, leather .. .. .. „	80
Hay .. .. „	80	Puckalls, leather .. .. „	150
Wood .. .. hogsheads	400,000	Tarpaulins, large .. .. „	90
Live Stock.		Sieves .. .. „	2
Bullocks .. .. .. number	72	Awnings .. .. .. „	8
Sheep .. .. „	5	Triangles, bamboo .. .. „	14

LIST OF ARTICLES—*continued.*

Names of Articles.	Number or Quantity.
Dead Stock—continued.	
Tarpaulins, small .. .. number.	220
Bullock hides .. .. .. ,,	400
Sheep skins .. .. .. ,,	1,400
Sheds, Commissariat stores .. ,,	2
Canvas paulins .. .. ,,	150
Weights, iron, 7 lbs. .. .. ,,	1
STORES issued to the natives of Abyssinia on leaving Senafé, for services performed:—	
Samuel.	
Sugar .. .. bags	2
Rice .. .. ,,	15
Flour .. .. ,,	15
Mudbeen, Shoun Amer, Abdoola, Ibrahim, suppliers of native carriage, each—	
Sugar .. .. bags	1
Rice .. .. ,,	10
Flour .. .. ,,	10
Three muccadums for the supply of wood, and two ditto for the supply of grass, each—	
Rice .. .. bags	5
FROM RAHAGEDI DEPÔT.	
Biscuit .. .. lbs.	5,403
Flour, 1st sort. .. .. .. ,,	473
Rice, 1st sort .. .. .. ,,	7,361
Sugar .. .. ,,	891
Tea .. .. ,,	720
Onions. .. .. ,,	126
Porter .. .. gallons	409
Flour, 2nd sort .. .. .. lbs.	10071·10
Rice, 2nd sort .. .. .. ,,	24655·4
Dhall .. .. ,,	12411·12
Ghee .. .. ,,	801·6
Salt .. .. ,,	2515·13
Tobacco .. .. ,,	..
Turmeric .. .. ,,	3712·15
Pepper .. .. ,,	50
Kokum .. .. ,,	447
Garlic .. .. ,,	70
Chillies .. .. ,,	162·1/16
Coriander seeds .. .. .. ,,	179
Mustard .. .. ,,	50
Pickles .. .. ,,	88
Lime juice .. .. ,,	..

Names of Articles.	Number or Quantity.
FROM RAHAGEDI DEPÔT—*cont.*	
Oil, cocoa-nut .. .. .. lbs.	138·2
Candles .. .. ,,	..
Hay .. .. ,,	59,778
Beans .. .. ,,	2,010
Barley .. .. ,,	..
Compressed forage .. .. ,,	4,505
Grain .. .. ,,	10385·10
Dead Stock.	
Buckets, zinc .. .. .. number	4
Cock, brass .. .. .. ,,	1
Measures, copper, ½ gallon .. ,,	2
Steel yards .. .. .. ,,	2
Funnel, tin .. .. .. ,,	1
Hammer, cooper .. .. .. ,,	1
Chisels, cooper .. .. .. ,,	1
Driver, cooper .. .. .. ,,	1
Scales, copper, small .. .. ,,	2
Scales, copper .. .. .. ,,	2
Weights, iron, 56 lbs. .. .. ,,	1
,, ,, 28 lbs. .. .. ,,	1
,, ,, 14 lbs. .. .. ,,	1
,, ,, 7 lbs. .. .. ,,	1
,, ,, ½ to ½ .. .. set	1
,, ,, 4 lbs. to 2 oz. .. ,,	1
Triangle with scales .. .. number	1
Tents .. .. ,,	2
Choppers, butcher's .. .. ,,	2
Knives, large .. .. .. ,,	1
,, small .. .. .. ,,	2
Saw .. .. ,,	1
Tarpaulins, 1st size, large .. ,,	40
FROM UNDUL WELLS DEPÔT.	
Biscuits .. .. .. lbs.	38
Sugar .. .. ,,	1297·12
Salt .. .. ,,	3,146
Rice, 1st sort .. .. .. ,,	2,424
,, 2nd sort .. .. .. ,,	16,294
Flour, 2nd sort. .. .. .. ,,	1,103
Dhall .. .. ,,	7,431
Ghee .. .. ,,	939
Turmeric .. .. ,,	20
Chillies. .. .. ,,	10
Kokum. .. .. ,,	136
Coriander seed. .. .. .. ,,	254
Grain .. .. ,,	7,818
Barley .. .. ,,	2,478
Beans .. .. ,,	740
Hay .. .. ,,	45,507
Tobacco, country .. .. ,,	52
Porter .. .. gallons	230

Reserve ammunition destroyed.

The Ordnance Department was at Senafè authorised to destroy a quantity of reserve ammunition on the highlands, no carriage being available for its transmission to Zula.

In the mean time, corps and batteries were gradually moved down to Zula pursuant to orders issued in the Quartermaster-General's Department, at whose disposal all troops were now placed for embarkation.

Sanitary arrangements in Sura Pass.

Sanitary arrangements in the Sura Pass were not omitted, latrines were dug and establishments were placed at each station to fill them in on the departure of the troops, to bury offal, to burn all dead animals, and to arrange for all conservancy matters. An officer was appointed at each station in the Pass for the duty of seeing the conservancy arrangements properly carried out.

Tents, ammunition, and entrenching tools in charge of regiments were packed and given over to the Staff Officer at Senafè, who arranged for their transmission to the Ordnance Store Depôt at Zula, forwarding duplicates of the receipts given by him, for the information of the Field Commissary of Ordnance. Such hospital stores and sick carriage as were not required for the journey down the Pass were also handed over to the Staff Officer at Senafè.

Marching arrangements down the Pass.

Movements down the Pass were efficiently carried out by the Quartermaster-General's Department, as well as the embarkation arrangements at Zula, during which not a single mishap occurred. Troops marched from Senafè to Undul, Undul to Sura, Sura to Kumayli; and on arrival at Kumayli got into the train, and proceeded at once to the pier-head at Zula, where steamers were ready to take them on board their respective transports. They left Senafè at 4 P.M, arrived at Rahagedi about 7 P.M., where tea was ready for them; thence they marched on Undul at 2 A.M., and left Undul for Sura at 2 A.M. next day, and marched from Sura that night at midnight on Kumayli, where a train was ready at 5 A.M. to take them to the pier-head, there to embark at once. An after-train left at 7 A.M. with their kits, which were shipped on board as soon as they arrived at the pier-head. Breakfasts, dinners, and teas were cooked and ready for the men at Undul and Sura, and breakfast at Kumayli, dinners being ready for them on board ship. Each regiment or corps sent an indent for rations twenty-four hours a-head to the Commissariat agents at Rahagedi, Undul, Sura, and Kumayli, and to the Deputy Commissary-General at Zula, in order that all might be ready on board ship on their arrival. Standing camps had already been ordered to be pitched at the stations in the Pass. Cooks and cooking pots were sent to each station in the Pass; also rations for men, horses, mules, &c. The men's kits were taken down in carts. One mule was given for every two men to ride from Senafè to Kumayli.

All surplus regimental tents or baggage, and Commissariat or Ordnance stores at Senafè or Adigrat, not required for the troops on their return march, were packed under the superintendence of an officer, and sent down with an escort to Zula, where they were stored under a guard till claimed. All regimental baggage at Antalo, or Commissariat stores not required for the troops, and which could be conveyed by native carriage, were sent to Zula in advance of the troops, under a suitable escort.

Services of G Battery 14th Brigade Royal Artillery and Armstrong Guns.

The movements of the Armstrong Battery, as far as Magdâla, have already been shown.* Their return march from Magdâla was a work of no slight difficulty. On the 14th of April, the day after the battery was engaged at Magdâla, it was laden on elephants in the afternoon, and marched to the Second Brigade camp. The horses were sent on to the Bashilo (7 miles) for water, which they had been without for 48 hours.

* See pages 13, 40, 63. Chapters XIV, XVIII, XIX.

They returned about midnight, and on the 15th marched to the Bashilo; on the 16th to the Talanta Plain, when one of the elephants died on the ghât, and was thrown into the ravine. On the 21st they commenced the return march. Captain Murray describes this as follows:—

Captain Murray's report of return march of Armstrong guns.

"April 22nd. Descended to the Jedda, and marched up the opposite side to Bet Hor; "took the battery on wheels the first half of the descent, then loaded it on elephants; "left at 8 A.M., arrived at midnight. 23rd. Marched to Sindi on wheels. 24th. Marched "to Gahso on wheels; when about 2 miles from camp, the horses were so fatigued that "we had to dismount the metal and put it on elephants; left at 7 A.M., arrived at 4 P.M. "25th. Marched to the Takazze; left with carriages in draught, metal on elephants, at "6 A.M.; on arriving at the head of the ghât, took the battery to pieces and packed it "on elephants; reached camp at 8 P.M. 26th. Marched to Muja; battery on elephants; "left at 10 A.M., arrived at 4·30 P.M. 27th. Shot three horses before marching to "Dildi; battery on elephants; ordered to march in rear of the baggage animals. Just "as it was getting dark, and about 4 miles from Dildi, a complete block took place. "Attempted for hours to get along; but finding it of no use, halted and unloaded the "elephants, though not before two had dispossessed themselves of their loads, one "throwing a gun-carriage into the ravine, and another falling over the side of the road "with a gun. 28th. Started at daybreak; loaded the gun-carriage, but in loading the "gun the spar broke; left a guard with the gun, till another spar could be got; arrived "in camp about 8 o'clock A.M.; the gun left behind was brought in about 1 o'clock P.M. "30th. Marched to Marawah; battery on elephants; left at 8.30 A.M.; the elephants very "much fatigued, and continually throwing their loads; had to leave four to come on as "they could, with a portion of the gunners; arrived in camp with the remainder, at "midnight; the four left behind came in at 5 o'clock the next morning.

"May 1st. Marched to Lat; battery on elephants; left at 8·30 A.M., arrived at "5 P.M., except one elephant, which came in the next morning. So many elephants had "now become weary, there was not a single spare one; and when one broke down on "the march, had to leave him and his load under a guard, until he had rested sufficiently "to be able to proceed, or until one could be sent back from the camp to bring the load "in. 3rd. Marched to Mussagita; left at 7 A.M., arrived at 3 P.M.; very heavy rain "and hail during the march; the elephants continually slipping and throwing their "loads. 4th. Marched to Ashangi; left at 7 A.M., arrived mid-day. 5th. Marched to "Mâkan; left at 7 A.M., arrived at 3 P.M; elephants refreshed considerably by the "previous two short marches. 6th. Marched to Bulago; left at 7 A.M., arrived mid-day; "very heavy rain. 7th. Marched to Atsala; one horse shot on the march. The tents "were so wet, from the heavy rains the night before, that battery could not start until "9·30 A.M. The camping ground was a perfect swamp. Before we had got 300 yards "from the camp, one of the elephants completely broke down, and had eventually to "be shot. There happened to be a spare one, and so shifted the load to it. On arriving "at the top of the first hill, a tremendous storm of hail came down. An elephant, "carrying a gun-carriage, threw it off and refused to stir; reloaded the carriage three "times, and each time he threw it off, and would not move an inch. After the third "time he lay down on his side, and nothing could be done with him; left a guard and "a detachment strong enough to put the carriage up, when another elephant could be "sent back for it. About a hundred yards down the other side of the hill, a second "elephant lay down and refused to move; this one had eventually to be shot; a guard "was left with him. On arriving at the foot of the hill, two of the others commenced "to lag behind; the rest went on under a Serjeant and a detachment. When the foot

" of the second hill was reached, one of the two got the staggers, and rolled over with " her load; she had also to be left with a guard; arrived in camp with the remaining " one at midnight; heavy rain or hail the whole day. 8th. At daybreak, some of the " men and elephants that had arrived the previous evening were sent back to bring in " the loads left behind; the gun-carriage was brought in at 4 o'clock this afternoon. " 9th. Marched to Mashik; left at 8 A.M., arrived at 4 P.M. 10th. Marched to Masgah; " left at 11 A.M., arrived at 3 P.M. 11th. Marched to Antalo; left at 9 A.M., arrived at " 1·30 P.M.; carriages on wheels, guns and limber-boxes on elephants. 13th. Marched " for Senafé, which was reached, without making a single day's halt, on the 22nd. On " the 15th, the forge-cart, with the team, capsized; the horses came on their backs; " neither men nor horses injured. At Senafé, picked up three wagons which had been " sent up from Kumayli. 23rd. Marched at 7 A.M., reached Rahagedi at 1 P.M.; went " down the ghât in draught. 24th. Left at 6 A.M., arrived at Mayen Wells at 12 o'clock " mid-day; left at 7 P.M., and reached Upper Suru at midnight. The elephants and " stores followed shortly after the battery, but their march was continued at once, " intending to halt at Lower Suru. On arrival there it was found advisable to continue " their march on to Kumayli, which they did, reaching that place about 5 next morning, " thus marching, with the escort of gunners from Rahagedi to Kumayli, a distance of " 46 miles, between 6 A.M. on the 24th and 5 A.M. on the 25th. The battery in the " meanwhile halted at Upper Suru, and proceeded on wheels, at 11 A.M., to go through " the Pass, having been assured that the same would be practicable by that hour. " 25th. Left Upper Suru at 11 A.M. The Pass was said to be practicable for guns to go " down in draught, but before they had proceeded a mile, had to halt while the Sappers " blasted the rocks in front. Having got about half-way down the Pass, found it utterly " impossible to proceed. Rain commenced, and as constant messages came down, saying " that the flood was coming, parked the battery. Carriages were run close together, and " lashed, to ensure all possible safety. The horses and all the men, excepting Com- " manding Officer and four men who remained as a guard, hurried on to Kumayli, and " arrived there at 9 P.M. At 1 o'clock the following morning, gunners and elephants left " Kumayli to return to the battery; this was taken to pieces, and in two trips carried " through the Pass to Lower Suru, where the horses met them, and after being again put " together, were taken to Kumayli; arrived about midnight. The battery had now " marched 177 miles in 13 days, without a halt. The strength of gunners for 29 elephants, " throughout the march, was 26 non-commissioned officers and men; the remainder " being employed necessarily as baggage guard, regimental guard, and with horses. An " average of 18 being required to unload a gun-carriage, some idea may be formed of " the work these men had to perform, viz., unloading and loading daily 29 elephants, " and reloading such as threw their loads on the march. Those who fortunately arrived " in camp earlier than the rest were necessarily turned out throughout the night to " unload the tired elephants as they reached the camp. This was in addition to the " marching, and does not include the numberless occasions on which the battery was " taken to pieces and put together again—a work in itself of great labour. The number " of horses lost by the battery, between Senafé to Magdala and back to Zula, was as " follows:—One killed by accident, one shot for sore back, and four shot on the march " from sheer exhaustion and inability to proceed. The horses dragged the battery about " 400 miles, going and returning, marching the remaining portion, carrying harness and " drivers. 28th. Left Kumayli at 1 o'clock A.M, arrived at Zula bunder at 6 A.M, and at " once commenced embarking battery and horses; everything was clear of the bunder " by the evening. Gunners very much exhausted, not having had a regular night's rest

"since they left Rahagedi. 29th. Completed stowing the battery away on board ship.
"30th. Sailed from Zula at daybreak."

On May 29, the last of the British troops evacuated Senafé. The Commander-in-Chief was accompanied by Prince Kassai to the head of the Pass, where the troops composing the rear-guard were formed up, while a salute was fired in honour of the Prince, who shortly afterwards took leave of Sir Robert Napier, and returned to Senafé. All local information had led to the belief that there would be no danger of floods in the Suru Pass before the middle of June; but owing to the extraordinary severity of the spring rains, a succession of floods, during the early part of May did much damage to the road through the defile. On May 19, with hardly any warning, a heavy flood, coming from a lateral tributary which enters the Pass above Suru, filled the channel of the Suru Defile so suddenly that seven camp followers and some cattle were swept away and perished, although every precaution had been taken by the establishments at the signalling stations at either end of the Pass to prevent such a calamity. By the exertions of the garrison of Suru, the damage to the road in the Pass was rapidly repaired after each flood.

Evacuation of Senafé. 29th May.

Flood in Suru Pass.

On May 28th, Mr. Dufton, who had been attached to the Intelligence Department, was attacked by a party of Shohos in the Kumayli Pass, and wounded so severely that death resulted. It is much to be regretted that he disregarded the stringent orders in force against marching without an escort. Possibly he thought his position allowed him a certain degree of latitude in arranging his own movements. No doubt, also, his having travelled a good deal in Abyssinia, and his being well known among the Shohos, had made him less careful of his safety than he otherwise would have been. He had been able to render, in a quiet, unobtrusive way, no inconsiderable service to the Expedition, chiefly in the important work of assisting the Commissariat to purchase supplies from the people. His character had gained him the respect of every one with whom he was associated; and when his remains were interred, at Undul Wells, it was felt by all that the Force had lost an useful and deserving officer. As soon as the report of Mr. Dufton's death was received, a party of the 25th Regiment Native Light Infantry under Lieutenant-Colonel Little was sent to obtain, if possible, some clue to the murderers, and to punish them. Lieutenant-Colonel Little's report is given below.*

Mr. Dufton killed.

25th Regiment sent to punish murderers.

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* "*From Lieutenant-Colonel Little, Commanding 25th Regiment N.L.I., to the Brigade Major, Brigadier-General Schneider's Column.*

Lieutenant-Colonel Little's Report.

"Sir, "*Camp Kumayli, 1st June*, 1868.

"I do myself the honour to report that, agreeably to instructions, I proceeded with the head-quarters of "my regiment yesterday morning to Seaule, the country in the vicinity of the spot where the late Mr. Dufton "was attacked. Our party of 50 men under Major Roome (who has doubtless reported his proceedings), "accompanied by Lieutenants Poole and Hennell, of the 25th Regiment, proceeded up one ravine, while I "with 50 more ascended the heights more in the direction of Suru. We saw a few men in the distant "mountains and ravines who made off as we approached. I then moved down the opposite side of the chain "of mountains at the bottom of which I could see a few huts; on reaching them, I found them unoccupied "except by an old man and woman and a child; nothing was found there belonging to the late Mr. Dufton or "Government. I had not proceeded far, when passing under a steep rugged cliff I came on some bundles "of kit lying in the path; I searched them but found no stolen property, and was proceeding, when I was "saluted by a volley of stones from some six or eight men who were concealed within the rocks, some dis-"tance above us. We fired several shots as opportunities offered, but as they kept behind the crest of the "hill, little chance was given my men for their shots taking effect; however I sent a few men upon the left "hand and others round the hill to the right, when the few Shohos made off at once to the high country; "where it was useless attempting to follow, especially as our water was running short and we had several "miles yet to march. One of my men received a blow on the head from a stone, but his pagree saved him, "though it inflicted a wound, but of no serious nature as he was able to march home with the detachment.

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Last column passes through the Suru Pass.

On June 1, the Commander-in-Chief, with the last column of the Force, passed through the Suru Defile and reached Kumayli. On the following day he arrived at Zula, where the embarkation of troops, stores, and animals had been busily progressing.

Arrival at Kumayli.

Sir Robert Napier had commenced preparatory arrangements for the re-embarkation of the Force so early as the 21st March, on which date Captain Tryon, the Principal Transport Officer, was informed by Captain Holland, in charge of the Quarter-master-General's Department, of the strength of each regiment, number of transport animals, horses, &c., and tonnage generally required; and Major-General Russell and the Commissariat Department at Zula were, at the same time, requested to make all further arrangements, so that, should the Expedition terminate in April, there might be no delay in the re-embarkation. At the same time the Bombay Government was informed of the arrangements thus ordered, and requested to inform Sir Robert Napier, at as early a date as possible, of the proposed destination of each corps. Application was also made for the services of the three Indian overland troop ships.

Arrange-ments for re-embarka-tion.

Survey Boards on transports.

Orders had been received from the Horse Guards regarding all regiments which were to go to England. All others were sent to Bombay, and the embarkation was completed as rapidly as possible. Final Survey Boards assembled on each ship, as in Bombay, prior to embarkation. These Survey Boards assembled, as a rule, three days before the date named for the embarkation. The Naval Brigade rejoined Her Majesty's steam frigates "Octavia" and "Satellite," and arrangements were made to prepare and provision ships for all the efficient mules, all the elephants, and 500 of the best camels.

Embarka-tion in May.

The troops destined for England were despatched to Suez, thence by rail to Alexandria, and by troop transports* home. The Native regiments, and those European regiments that had not completed their period of service, returned to India; the 25th Regiment Bombay Native Light Infantry forming the rear-guard of the Force.

By the 1st June all stations, except Zula and Kumayli, had been finally evacuated. The following Return shows the strength of the several corps serving in the Force on this date:†—

"We regained the Suru road at about 1 o'clock, when I halted during the heat of the day, and rejoined the "camp at Suru at about half-past 7 p.m.

"I was accompanied by Mr. Munzinger, by whose advice I was guided as to the line of country I took "Lieutenant and Adjutant Withers, Assistant-Surgeon Knapp, of the 25th, also Captain Bates, Transport "Train, also accompanied my party.

"My men had a long and fatiguing day's work, and though without food or water, were as eager and "willing as I could wish.

"The prisoner under trial by General Merewether, C.B., and who was sent with me, was shot while attempt-"ing to escape from the guard. I was not present at the time, but the subject has, I am aware, been reported.

"I have the honour to be, Sir,

"Your most obedient servant,

"A. R. LITTLE, *Lieutenant-Colonel*,

"*Commanding 25th Regiment, N.L.I.*"

* "Simoon," "Crocodile," "Serapis," and "Urgent," were ordered to be at Alexandria by the 26th May.

† Quartermaster-General's Returns, 1st June, 1868.

Strength and disposition of the Force on the 1st of June.

Corps.	Station.	Number of Troops or Companies at each Station.	At Regimental Head-Quarters, or on detached duty at the Station.						Effective Strength, exclusive of those sent or left at Home or in India.							
			Field Officers.	Captains.	Subalterns.	Staff.	Native Officers.	Staff Sergeants.	Sergeants.	Trumpeters or Drummers.	Farriers.	Rank and File.			Total Non-Commissioned Officers and Men.	Horses, including Officers' Chargers.
												Fit for Duty.	Sick in Hospital.	On Command.		
ROYAL ENGINEERS.																
10th Company.. ..	Zula ..	1	1	..	1	..	..	1	5	1	..	70	3	1	81	1
SAPPERS AND MINERS.																
Bombay Sappers ..	Kumayli. ..	4	..	2	2	8	2	20	7	..	435	36	..	500	8
Madras ,,	,, ..	3	1	2	3	5	..	29	6	..	327	..	..	367	13
NATIVE INFANTRY.																
3rd Regiment ..	Zula ..	8	1	2	5	14	3	35	15	..	588	10	..	618	10
25th ,, ..	Kumayli. ..	8	2	..	3	4	2	29	13	..	370	17	127	514	12
27th ,, ..	,, ..	8	2	1	2	4	1	35	16	..	478	114	27	670	10
Total ..	.. ..	32	7	7	21	17	54	3	153	58	..	2,268	180	155	2,817	54

The following Statement shows in detail the troops that left the shores of Africa in May:—

Departures of troops in May.

Corps.	Officers.	Non-Commissioned Officers and Men	Horses.	Date of Departure.	Destination and in what Ship.
					For Bombay.
18th Regiment Native Infantry	8	755	9	4th May, 1868	Camperdown.
					Avabhoy.
5th Battery 25th Brigade Royal Artillery	4	98	7	15th ,, ,,	Irwell.
				16th ,, ,,	Sir Bartle Frere.
Details	4	366	10	12th ,, ,,	Sam Cearns.
				15th ,, ,,	Severn Steel.
26th Regiment	29	795	20	16th ,, ,,	Trafalgar.
Details	2	294	6	17th ,, ,,	British Princess.
Invalids	1	20	..	19th ,, ,,	Scimitar.
				19th ,, ,,	Water Witch.
10th Bengal Cavalry	9	448	231	22nd ,, ,,	Ellen Stuart.
					Winchester.
				25th ,, ,,	Dallam Tower.
45th Foot	29	598	14	22nd ,, ,,	T. A. Gibb.
				29th ,, ,,	City of Manchester.
Invalids	..	40	..	22nd ,, ,,	Ann Millicent.
2nd Grenadiers, Native Infantry	4	430	6	23rd ,, ,,	Michael Scott.
					Alabama.
21st Punjab Infantry	10	755	9	24th ,, ,,	Catherine Apcar
					Vernon.
					Durham.
23rd Punjab Pioneers	14	721	..	25th ,, ,,	Howrah.
				26th ,, ,,	Malabar.
					Surrey.
					Beaumaris Castle.
3rd Sind Horse	15	449	205	25th ,, ,,	Louisa.
					Zoroaster.
					Kingston.
				25th ,, ,,	Continental.
12th Bengal Cavalry	11	371	180		Nile.
				29th ,, ,,	Underley.
					Legion of Honour.
G Battery 14th Brigade Royal Artillery	11	168	..	28th ,, ,,	Decision.
					Sultan.
10th Regiment Native Infantry	7	359	10	29th ,, ,,	American.
Volunteers	7	350	11	29th ,, ,,	Canova.
					Humber.
3rd Light Cavalry	13	414	429	29th ,, ,,	Arrundel.
					Star of the North.
					Queen of Australia.
					For Suez.
33rd Foot	4	590	11	30th May, 1868	Queen.
3rd Dragoons	21	154	..	30th ,, ,,	Ottawa.
4th Foot and Royal Artillery	51	702	5	.. .. ..	England.
Total	254	8,878	1,163		

NOTE.—From Quartermaster-General's Return dated the 1st June, 1868.

On June 10th, Sir Robert Napier, after handing over to the Egyptian Governor, Abdul Kadir Pacha (who offered to take charge of them), the care of some railway plant and buildings which could not conveniently be removed till after the monsoon, and the custody of the British cemetery at Zula, embarked in the "Feroze," accompanied by a few officers of his Staff,* and the Prince Alamayou, and sailed for Suez, whence he was conveyed to England, by rail to Alexandria, and thence in Her Majesty's ship "Urgent" (Captain S. Henderson, R.N.) to Malta and Marseilles.

Charge of stores and cemetery at Zula given over to Egyptian Governor.

The following Report by Captain Tryon, R.N., explains some matters connected with the Naval Transport Department at Zula:—

Departure of Sir R. Napier.

"Till we received decisive information that the object for which the Abyssinian "Expedition was undertaken was attained, everything was conducted as though the war "was to last an indefinite period.

Captain Tryon's report.

"The only exception to this was, that the arrangements for completing the trans- "ports with water, which necessarily would occupy much time and many steamers, were "commenced so soon as the Force was known to be actually advancing on Magdála.

"At one time we had no less than nine first-class steamers condensing with their "main engines into vessels requiring to be supplied with water.

Arrangements for watering transports.

"It was necessary to collect in Abyssinia as many stores of all descriptions as would "provide against the season of the south-west monsoon, when no sailing-vessel could "make the passage from Bombay to this port.

"All stores were pushed to the front, and to a distant point, as rapidly as possible; "the stations or posts were held by as few men as was consistent with their safety; the "labour at Zula was continually being drafted to the front to supply wants there, and "but very few coolies arrived to take the place of those thus removed, or of the very "large number that were returned as unfit to India: thus the labour on the beach was "far too little for the work to be done.

"From this, as well as from other causes, a very large number of sailing-vessels were "detained in Annesley Bay longer than they otherwise would have been. The store- "houses were not sufficiently capacious.

Cause of detention in Annesley Bay of so many vessels.

"After a time, sailing-vessels could not be expected to make a second trip to "Annesley Bay before the change of seasons, besides weekly mails had to be run to Suez "and to Bombay. These vessels returned here loaded, and it was decided to clear "steamers in preference to all other vessels, and to keep them going.

"At no time would it have been difficult to have cleared the vessels, but it could "only have been done by pitchforking the stores on to the beach, and leaving them "there; for there were neither men enough to remove nor storehouses to receive them.

"We had several sharp warnings which showed us that exposed stores would certainly "perish. The local rains, or rain on the hills, would cover the plain with pools of water "and innumerable streams, which would rapidly run off into the sea, but would certainly "destroy any stores not placed in safety. Again, during spring tides, if the wind was a "little stronger than usual, and a point or two more to the eastward, it would carry the "sea-water far inland, over the very low shore; and though barriers were thrown up to "check this, they were not always sufficiently high or strong.

"When Magdála fell, and we became aware that the campaign, as far as the object "of it was concerned, was over, it became necessary to arrange for the return of the troops.

* Colonel the Honourable F. Thesiger, Deputy Adjutant-General, Lieutenant-Colonel Dillon, Military Secretary, Captain Holland, Assistant Quartermaster-General, Captain Speedy, Amharic Interpreter, Lieutenant Tweedie, Political Secretary, Lieutenant Scott and Cornet Lord C. Hamilton, Aides-de-camp.

"The position of the main body of the Force may be described as being at the "extreme end of a long chain of posts, which had a bare sufficiency of men to guard them.

"It is apparent that, with a force so situated, but very few troops or followers could "be spared to be embarked till the main body had gained, on their return march, a "position of security, not only with reference to their supplies, but in case the Suru Pass "should be so impracticable from the threatening rains as to necessitate their delay on "the highlands any considerable time.

"The return of the Force necessitated the landing and sending to the front large "quantities of stores to place the different stations in a state of efficiency to receive and "victual the troops on their return.

Insufficiency of labour at Zula.

"Thus, as I have already pointed out that the labour on the beach was insufficient, "there was no cessation to their ordinary work, viz., landing stores and pushing them to "the front; and, as it was, the number of hours the men were kept to their work was "considered excessive, and several remonstrances were made by the medical authorities, "and not before it was necessary, for many were prostrated from the effects of the sun "and overwork.

"It will be apparent, therefore, if the above remarks are accepted, that it was not "possible to do much to prepare ships to receive men and animals; nor was it possible "to detail ships with any degree of accuracy, as there was the widest divergence of "opinion as to the number of 'cooking' or 'non-cooking' men left with the different "corps.

"Great changes had been made in the composition of the Force since its last "arrival in the country, to render it better suited for the work before it; however, the "ships were prepared as soon as embarkation returns were received from the front.

"A considerable number of our best steamers, which were greatly relied on to re-"embark the Force, were absent either at Bombay or Suez; and these, when they "arrived, were not prepared to embark troops, &c., being loaded, holds and decks "being crammed with all descriptions of stores; these had to be removed to sailing-"vessels, which were prepared and kept in readiness for the purpose.

Necessity to send ships in tow of steamers as far as Cape Furtak.

"On no occasion were men detained more than one day on board; and this, when it "did occur, was the result of some sudden pressure, or of some unavoidable change in "arrangement. It must be borne in mind that it was considered necessary to escort "sailing-vessels with steamers, in the first instance as far as Cape Furtak, then 60 miles "beyond Aden, and always as far as the latter place. It thus was necessary to arrange "matters to fit the steamers we had at our command, and to load sailing-vessels of "proper sizes simultaneously with suitable steamers. Thus, when any change occurred "which necessitated the delay of a single vessel, whether the alteration was due to the "difficulties of bringing the men down the Pass, or from any other cause, it was liable to "cause the detention, if of a steamer, of the sailing-vessels she was to tow also, or, if of "a sailing-vessel, of the steamer that was to tow her, as we could not afford to start "steamers without the vessels to which they were attached.

"Great care was taken to discover all deficiencies in the equipment of the vessels "before they left this port, and I trust that the object was secured by the precautions "that were taken.

Embarkation arrangements.

"The regiments had part of their baggage with them, and a part was left on board "a store-ship at Zula. The troops came in from Kumayli in the morning; medical "surveys were held; invalids, as selected, were despatched to ships for conveyance to "England, *vid* Suez or *vid* the Cape, or to India if necessary. Horses and animals were "inspected and cast on arrival, and spare animals were kept in readiness to ship in their

"place, and baggage had to be sorted. All this took place on the beach. The troops "embarked and sailed the following morning."*

"The baggage from the "Indian Chief" (the store-ship) was sent direct to the "respective head-quarter vessels, directly the vessels were selected for the different "portions of the Force; and an officer of each corps was sent on in advance, to be "responsible for its proper distribution.

"I believe that whether we regard the extreme distance of Magdala from the beach, "or the narrow pass through which the Force had to be brought—a gorge up which the "road at one time was so good a four-in-hand might have been driven, and yet a few "hours afterwards it would be filled with a raging torrent, which equally suddenly, in its "turn, subsided, leaving but few traces of the road, but in its place huge projecting "boulders washed bare; and up the bed of this dry torrent, till the road was temporarily "renewed, it was barely possible for foot people to scramble.

"When one recalls these circumstances, one cannot do otherwise than appreciate "the punctuality with which the Force arrived at Zula, and the foresight which directed "its movements. Punctuality of arrival of troops at Zula on dates originally specified.

"The tonnage that was collected at Zula for re-embarking men and animals was "ample for all. The animals appear to have suffered much on the return march, and "their numbers were much reduced in consequence.

"Our resources for embarking the Force were ample. Six to nine vessels could be "victualled a-day, without disturbing other arrangements. We had nine large iron "lighters and four tugs, three steam water-tanks, besides a large number of native boats. Iron barges.

"The iron barges were admirably adapted for the purpose; they held 300 men, or "120 mules, or 60 Cavalry men, with horses, &c., or 8 to 10 elephants.

"They receive a locomotive with ease, had good anchors, chain and windlass to "weigh with, hauling lines, &c. A small housing was put up aft, to protect their crew, "and they carried a large cargo safely and well, under all circumstances. These lighters "had a crew of a Tindal and six men, and their draught of water was small."

The following extract from the fortnightly Report furnished to the Horse Guards by Captain Holland, Assistant Quartermaster-General, on the 11th June, 1868, explains the state of affairs generally on the day Sir Robert Napier quitted Africa. Captain Holland's report of 11th June.

"By the time that the Commander-in-Chief left Zula, 4,332 mules and ponies, "860 draught bullocks, and about 650 carts, had been shipped and sent to Bombay. Land "Tonnage was then available in Annesley Bay for 600 bullocks and 100 ponies, in addition Transport "to the above. These were shipped on the 11th and 12th June. Corps.

"The remaining animals of the Transport Train were left on the coast of Abyssinia, Number of "under the charge of the acting British Consul at Massowah, Mr. Münzinger. These animals left "numbered 6,065 camels, 1,257 donkeys, and about 6,000 mules and ponies. Most with Mr. "of them were in poor condition, and unfit to be sent on a sea voyage to India at that Münzinger. "season of the year. The pack bullocks had been disposed of, generally as beef, to the "several ships in harbour, and to meet the requirements at Aden.

"The arrangements made with Mr. Münzinger for the care of the animals left in his Arrange- "charge, were, that he should engage a sufficient number of watchers to provide for their ments for "safety while grazing on the ground to the north and north-west of Massowah, and along their care. "the eastern edge of Abyssinia, where forage and water were said to be abundant. No

* Arrangements for the embarkation of the Force were made on the 21st March. See page 102. The date proposed for the embarkation of each corps was fixed by the Quartermaster-General's Department on the 1st of May, and the programme then arranged carried out, with very slight deviations.—See accompaniment No. 4 to Sir R. Napier's despatch, dated 19th May, 1868, page 468, Chapter XXXVIII.

"charge was to be made against the State for forage; and the only expense to be incurred "by Government, under this arrangement, was to be the pay of the watchmen and a "commission of 5 per cent. to M. Münzinger on account of any animals sold by him. "M. Münzinger gave receipts for all that were handed over to him, and received instruc- "tions to comply with any requisitions made upon him for Transport Train animals by "the Governments of India, Bourbon, and the Mauritius. The Transport Train had "to the last been employed in moving the tents, baggage, ammunition, and stores of the "Army from Antalo to Zula, and in clearing out the several depôts on the line of march.

Railway. "The railway had been in use altogether three months, though it was only within "the last month that the whole line had been open to traffic. On the 24th May, the "Commissariat Department reported that no more carriage for stores from Zula to "Kumayli would be required; and about this date the troops forming the Magdála "force commenced arriving at Kumayli, on their march to the sea-coast, and were con- "veyed by rail to Zula.

Traffic returns. "From the traffic returns it appears that in three months the railway had carried "9,000 tons Commissariat stores 9¼ miles; 2,400 tons of material 9¼ miles; 14,000 "troops and 10,000 followers 12 miles; and 2,000 tons of baggage 12 miles. This work "had been performed without accident; and for the short time and distance the railway "had been in use, it proved invaluable in that it saved, during the hottest period of "the year, the troops and baggage animals one of the most trying marches they would "otherwise have had to undergo.

Rails and sleepers. "It was not thought advisable to delay the departure of the few troops at Zula, "in order to remove the rails, sleepers, and sheds, many of these being considered not "worth the cost of the demurrage that would have to be paid on account of detention "of shipping for their conveyance to Aden or India.

Locomotives. "All the locomotive engines were shipped, as well as every article connected with the "railway which it was considered possible to remove, without delaying the embarkation of "the troops.

Telegraph. "All the telegraph wire stretched in Abyssinian territory (that is from Antalo to "Senafé) was taken down and brought to Zula. The rapid march of the Army, "however, from Senafé to Kumayli through the Pass, to save detention from the floods, "prevented that portion of the line, which had been erected between these two "stations, from being removed.

"The following tabular Statement shows the number of messages sent from each "station:—

Number of messages sent.

From.	January.	February.	March.	April.	May.	Grand Total.
Zula	165	333	399	324	518	1,739
Kumayli	175	309	302	200	446	1,432
Suru	..	108	187	119	240	654
Undul	..	127	218	134	327	806
Rabagedi	..	96	200	137	413	846
Senafé	..	146	370	250	507	1,273
Focadá	..	..	..	16	52	68
Adigrat	..	..	245	175	171	591
Antalo and the Head-Quarters of the Army ..	..	..	18	170	251	439
Total during 5 months	340	1,119	1,939	1,525	2,925	7,848

"The works executed between Antalo and Kumayli, for the advance, for the "supply of water, were in use during the return of the Army. The pumps were taken "up and carried to the sea-coast as each station was evacuated. Well-sinkers and water supply.

"On the 19th of May, the works at Upper Suru were entirely washed away by a "heavy thunderstorm. At Kumayli, the works were also damaged by the same flood. "The restoration of these works, however, was completed by the 26th of May; and they "were more strongly protected in case of the re-occurrence of similar floods. Thunder-storm and flood.

"In the meantime, temporary arrangements were made for watering the depôt at "Kumayli.

"The delivery of water on the 1st June, at Kumayli, was in excess of 500 tons "daily, exclusive of 3,000 gallons despatched to the railway terminus, three quarters of "a mile distant, for the use of the men employed there, and the troops proceeding to "Zula. Delivery of water at Kumayli on 1st June.

"As the station of Kumayli gradually cleared out, and troops, followers, and "transport animals removed to Zula for embarkation, the demand for water daily "decreased till June 9th, when the station was finally evacuated and the water arrange-"ments closed, the pumps being removed and stored on board ship for transmission to "Bombay.

"The officer in charge of the arrangements for water-supply reported that the "suction, force, and portable hand-pumps supplied by Messrs. Owen and Clinton, and "the Bastier chain-pumps supplied by Mr. Jackson, had acted admirably throughout.

"The detachments of Cavalry told off for postal duty at the several stations along "the line of communications, rejoined their regiments on their return march, and "embarked for Bombay. When Kumayli was evacuated, no inland post was of course "required. One steamer left Annesley Bay for Suez with the mail for England, as soon "as the last of the stores had been shipped and the troops embarked. Postal Department.

"The returning Army found the road from Antalo to Adigrat improved. From "Adigrat to Senafé a good cart road had been made over the original rough track; and "from Senafé to Kumayli the road was found in fair order, although it had on several "occasions been severely damaged by floods through the Pass, particularly on the 19th "May, when a very violent flood came down in the neighbourhood of Suru, completely "destroying the old road, and carrying away by its force seven native followers and several "baggage animals. The repairs to the road, however, had been well carried out; and "it was quite practicable for carts when the last column marched into Kumayli on the "1st June." Roads and approaches. Heavy flood.

As soon as the news of the probable early termination of operations in Abyssinia reached England, the Secretary of State for War despatched two Commissioners, Messrs. Elliott and Robinson, to Zula, to advise as to the disposal of stores, and to value, on behalf of the Imperial Government, all stores sent back to India. When the vessel conveying these gentlemen arrived at Zula, it had to be placed in quarantine, and Mr. Elliott, shortly after his arrival, died at Zula of heat apoplexy. In consequence of this melancholy event, and the rapidity with which the re-embarkation and re-shipment of stores had taken place, the duty on which these Commissioners had been sent to Zula, could not be carried out. War Office send two Commissioners to value stores. Mr. Elliott's death. Duty abandoned.

Final embarkation and return.

The following Return, framed by the Quartermaster-General's Department, shows the number of troops, followers, and cattle embarked at Zula from the commencement of the re-embarkation (11th of May) to the departure of Sir Robert Napier on the 10th June :—

Name and Description of Transport.	Date of Departure.	Destination.	Corps or Department.	Numbers Embarked.						
				Officers.	European Troops.	Native Troops.	Followers.	Horses.	Mules or Ponies.	Civilians.
Sailing Vessel, Camperdown	11th May	Bombay	18th Native Infantry	8	..	755	51	9	..	..
,, Avabboy	,, ,,	,,								
Steamer, John Bright	,, ,,	Aden	Transport Train	..	..	..	100	..	..	..
,, Pearl	12th ,,	Bombay	,, ,,	..	..	..	86	..	..	..
Sailing Vessel, Sunbeam	,, ,,	Aden	,, ,,	..	..	..	88	..	..	..
,, Sam Cearns	,, ,,	Bombay	Details	4	..	366	110	10	..	1
,, Hodeida	13th ,,	Suez	Transport Train	..	..	..	121	..	..	20
Steamer, Japan	15th ,,	,,	Bazarmen	1	..	..	..	..	..	3
Sailing Vessel, Irwell	,, ,,	Bombay	5th Bat. 25th Brig. R.A.	3	97	..	51	5	85	1
,, Gavin Steel	,, ,,	,,	26th Regiment	13	378	..	25	6	..	2
Steamer, Sir Bartle Frere	16th ,,	,,	5th Bat. 25th Brig. R.A.	1	1	..	119	2	80	..
Sailing Vessel, Trafalgar	,, ,,	,,	26th Regiment	16	417	..	50	14	..	3
Steamer, General Outram	,, ,,	,,	Transport Train	..	..	..	41	..	..	1
Sailing Vessel, Teazer	,, ,,	,,	,, ,,	..	1	..	148	..	..	3
,, British Princess	17th ,,	,,	Detachment	2	1	293	115	6	..	..
,, Annie Frost	19th ,,	,,	Transport Train	2	1	2	89	3	163	..
,, Scimitar	,, ,,	,,	Invalids	1	..	25	310	..	..	..
,, Waterwitch	,, ,,	,,	10th Bengal Cavalry	1	..	76	146	53	18	..
,, Ellen Stuart	22nd ,,	,,	,, ,,	1	..	109	84	39	73	..
Steamer, Indore	,, ,,	Suez	Commissariat	7	..	..	58	..	..	7
,, T. A. Gibb	,, ,,	Bombay	45th Regiment	7	290	..	25	3	..	3
Sailing Vessel, Ann Millicent	,, ,,	,,	Invalids	..	..	40	254	2	..	9
,, Michael Scott	23rd ,,	,,	2nd Native Infantry	4	..	430	66	6	..	..
,, Alabama	24th ,,	,,	21st Punjab Infantry	3	..	218	65	1	70	..
Steamer, Catherine Apear	,, ,,	,,	,, ,,	5	..	226	55	4	60	..
Sailing Vessel, Vernon	,, ,,	,,	,, ,,	3	..	311	61	4	70	..
,, Winchester	25th ,,	,,	10th Bengal Cavalry	4	..	136	72	75	19	..
,, Dallam Tower	,, ,,	,,	,, ,,	3	..	127	110	64	76	..
,, Durham	,, ,,	,,	23rd Punjab Infantry	5	..	178	96	6	77	..
,, Howrah	,, ,,	,,	,, ,,	5	..	172	71	48	14	..
,, Zoroaster	,, ,,	,,	Sind Horse	2	..	117	38	49	29	1
,, Kingston	,, ,,	,,	,, ,,	1	..	112	58	59	36	..
Steamer, Lord Elphinstone	,, ,,	Aden	Transport Train	..	..	..	25	..	..	..

Name and Description of Transport.	Date of Departure.	Destination.	Corps or Department.	Numbers Embarked.						
				Officers.	European Troops.	Native Troops.	Followers.	Horses.	Mules or Ponies.	Civilians.
Sailing Vessel, Beaumaris Castle	25th May	Bombay	Sind Horse	9	..	103	53	53	20	..
,, Louisa	,,	,,	,,	3	..	117	15	44	28	..
,, Malabar	26th	,,	23rd Punjab Infantry	3	..	206	77	19	64	..
,, Surrey	,,	,,	,,	1	..	165	86	4	83	..
,, Continental	,,	,,	12th Bengal Cavalry	2	..	81	67	63	63	..
,, Nile	,,	,,	,,	4	..	90	85	10	93	..
Steamer, Krishna	27th May	,,	Transport Train	5	..	49	259	4	..	..
Sailing Vessel, Cownsjee Jehanger	,,	,,	,, 220 bullocks	..	1	..	153	..	..	..
,, ,, ,,	,,	,,	Aden	1	..	8	153	1	20	..
,, Faizul Kurreem	,,	,,	Bombay Invalids	1	2	18	155	..	..	..
,, Decision	28th	,,	(G. Bat. 14th Brig. R.A.	6	48	..	120	7	77	1
Steamer, Sultan	,,	,,	,,	5	120	..	31	..	..	1
,, Dessuck	,,	,,	Suez Transport Train	..	..	..	*194*	..	..	..
,, American	29th	,,	Bombay 10th Native Infantry	7	..	359	52	10	..	..
Sailing Vessel, City of Manchester	,,	,,	,, 45th Regiment	22	308	..	54	11	..	2
,, Canova	,,	,,	,, Volunteers	7	350	..	19	11	..	1
,, Underly	,,	,,	,, 12th Bengal Cavalry	3	..	107	117	41	90	..
,, Legion of Honor	,,	,,	,,	2	..	93	60	66	47	..
,, Humber	,,	,,	,, 3rd Bombay Cavalry	3	..	110	53	105	..	..
,, Arundel	,,	,,	,, ,,	2	..	89	31	92	..	..
,, Star of the North	,,	,,	,, ,,	4	..	99	91	110	..	..
,, Queen of Australia	,,	,,	,, ,,	4	..	116	84	122	..	..
Steamer, Queen	30th	,,	Suez 33rd Regiment	4	590	..	..	11	..	..
,, Ottawa	,,	,,	,, 3rd Dragoon Guards	21	154	..	21	..	..	18
Sailing Vessel, Moderation	31st	,,	Bombay Invalids	..	..	..	241	..	..	..
,, Compta	,,	,,	,, With 17 elephants	1	3	1	160	1	..	..
,, Hahnehman	,,	,,	,, 22 ,,	1	1	..	46	..	..	..
Steamer, Mula	,,	,,	,, Transport Train	..	..	..	250	..	..	1
,, England	1st June	,,	Suez (Royal Artillery and 4th Ft.	51	702	..	..	5	..	..
,, Bengal	3rd June	,,	Madras Coolies	4	..	..	167	2	..	2
,, ,,	,,	,,	Calcutta ,,	7	..	1	393	13	..	..
,, Arabia	,,	,,	Kurrachee 27th Bombay N. I.	3	..	343	40	..	..	2
Sailing Vessel, Howden	2nd	,,	Bombay ,,	2	..	536	500	4	..	..
,, Empire of Peace	3rd	,,	,, Transport Train	5	7	17	556	3	..	..
,, Dilawur	,,	,,	,, ,,	1	2	7	174	..	190	..
,, Star of Brunswick	,,	,,	,, ,,	1	..	7	302	..	213	17
Steamer, Kangaroo	,,	,,	,, Commissariat	12	..	76	362	..	..	..
,, India	,,	,,	Kurrachee 27th Bengal N. I.	3	287	40	8	..	..	..
Sailing Vessel, Ophir	,,	,,	Bombay Coolies	..	1	420	..	..	..	..
Turkish Steamer, Cosseir	,,	,,	Suez ,,	..	..	..	181	..	..	..

Name and Description of Transport.	Date of Departure.	Destination.	Corps or Department.	Numbers Embarked.						
				Officers.	European Troops.	Native Troops.	Followers.	Horses.	Mules or Ponies.	Civilians.
Sailing Vessel, Western Star	4th June	Bombay..	Coolies	1	..	..	352	..	..	..
,, Defiance ..	,, ,,	,, ..	,, ...	1	1	..	268	1	171	..
,, Geraint ..	,, ,,	,, ..	,, ...	1	2	..	148	..	189	..
,, Mai Blume ..	,, ,,	,, ..	Details	1	..	53	45	98	..	..
,, Middlesex ..	5th ,,	Madras ..	Madras Sappers ..	13	14	333	104	14	..	..
,, Royal Standard.	,, ,,	Bombay ..	Transport Train ..	3	5	26	745	10	..	..
Hospital Steamer, Mauritius	,, ,,	Suez ..	Details	33	111	..	..	..	..	..
Sailing Vessel, City of Dublin.	6th ,,	Bombay ..	,, ...	3	32	52	398	5	..	..
,, Prem. Chund Roy Chund ..	,, ,,	,, ..	Transport Train ..	1	..	..	560	3	..	..
,, Balkama ..	,, ,,	,, ..	,, ,, ..	1	2	..	252	2	197	..
,, Victoria Cross	,, ,,	,, ..	,, ,, ..	1	2	..	253	3	175	..
Steamer, Viscount Canning ..	,, ,,	,, ..	Commissariat ..	..	..	..	220	..	..	..
Sailing Vessel, Dreadnought ..	,, ,,	,, ..	Transport Train ..	1	3	..	194	4	230	..
,, Clytie	,, ,,	,, ..	,, ,, ..	1	..	1	123	2	85	..
,, Sophia Joachim	,, ,,	,, ..	,, ,, ..	1	1	..	200	2	183	1
,, Alcar.. ..	7th ,,	,, ..	,, ,, ..	1	2	..	185	2	200	1
Steamer, Peruvian	,, ,,	,, ..	Details	16	2	207	293	..	..	..
,, Bombay Castle ..	,, ,,	,, ..	Commissariat ..	..	..	..	151	..	..	..
Sailing Vessel, Pearl of India .	8th ,,	,, ..	Transport Train ..	1	3	..	82	..	170	..
,, Mandalay ..	,, ,,	,, ..	,, ,, ..	1	2	..	154	3	210	..
,, Zenobia	,, ,,	,, ..	,, ,, ..	2	11	5	565	2	..	3
,, Bernice	,, ,,	,, ..	,, ,, ..	1	..	12	53	60	70	..
Steamer, Earl Canning ..	,, ,,	,, ..	,, ,, ..	1	2	..	96	3	157	..
,, Tynemouth	,, ,,	,, ..	,, ,, ..	1	..	..	106	14	150	1
,, Great Victoria ..	9th ,,	,, ..	,, ,, ..	1	12	38	218	6	287	4
,, West Indian	,, ,,	,, ..	3rd Native Infantry ..	4	..	285	127	7	..	..
Sailing Vessel, Mabel.. ..	,, ,,	,, ..	Remounts	2	1	..	152	113	..	..
Steamer, John Bright.. ..	10th ,,	,, ..	Transport Train ..	1	..	..	250	..	..	..
Sailing Vessel, British Monarch	,, ,,	,, ..	3rd Native Infantry ..	6	..	346	70	6	..	..
Steamer, Californian	,, ,,	Bombay..	Bombay Sappers ..	7	9	306	52	10	..	..
		Aden ..	,, ,, ..	1	3	102	10	2	..	..
,, Norna	,, ,,	Bombay..	Transport Train ..	8	6	10	130	20	..	..
Sailing Vessel, Kooriah Mooriah	,, ,,	,, ..	,, 120 bullocks..	1	2	..	200	..	..	..
,, Rowena.. ..	,, ,,	,, ..	,, 130 ,, ..	1	2	..	200	..	..	..
,, Spray of the Ocean ..	,, ,,	,, ..	,, ,, ..	1	..	..	350	..	..	..
Steamer, Feroze	,, ,,	Suez ..	Staff	10	7	..	20	1	..	5
Total	..	..	.. ..	440	4,000	8,727	15,534	1,678	4,332	114

In addition to the numbers noted above, 39 elephants and 478 draught bullocks were sent to Bombay.

On the 11th of June the 25th Regiment Bombay Native Light Infantry was the only regiment at Zula. This corps remained as a guard for the stores, &c. 25th Regiment, N.L.I. last corps at Zula.

The following letter from Major-General E. Russell, commanding at Zula, to the address of the Secretary of State for India, and dated the 19th June, 1868, reports the final evacuation of Zula:—

"I have the honour to inform you that the whole of the troops and followers have "left the Abyssinian shore. The last of the stores and followers, with the Head-Quarters "of the 25th Regiment Native Infantry, embarked on the 17th instant, and the rear-"guard, being two companies of the 25th Regiment, on the 18th instant, after having "ascertained that no followers were on shore. Final evacuation on 17th and 18th June.

"The railway and sundry sheds and some railway trucks have been left, under "charge of an Egyptian guard, until sent for.

"Captain Edye, with some men-of-war, remained to bring away condensing vessels "and lighters.

"On the morning of the 18th instant all of the land forces and followers that "remained, sailed out of Annesley Bay. The Navy will leave during the 19th."

CHAPTER XXII.

TELEGRAPH AND ARMY SIGNALS.

THE direction of telegraph lines and the organization and control of the officers of the telegraph and army signal departments in Abyssinia, were, throughout the campaign, under the Quartermaster-General's department.

Proposals for telegraph communication between England and Massowah *viâ* Bagdad, and between Suakin and Massowah.

Prior to the commencement of operations, permission was sought by the Foreign Office, and obtained from the Porte, to send telegraphic messages along the Syrian coast line from Bombay to England, *viâ* Bagdad. The idea was also entertained that telegraphic communication might be established with Abyssinia direct, for it was understood that the telegraph line would be opened from Egypt to Suakin shortly. It was only about 280 miles from Suakin to Massowah, and it was thought that a telegraph might be laid for this portion in two or three months. The Viceroy granted the desired permission for the construction of this line. The idea was, however, afterwards abandoned on account of the following letter from the Vice-Consul in Egypt, dated the 31st August, 1867 :—

Difficulties in laying down a line *viâ* Suakin.

"With reference to my telegram of yesterday, regarding the telegraphic communication between Lower Egypt and Nubia, it may be well perhaps that I should state, in explanation of the slow progress that is made in laying down a line to Souakin, that owing partly to negligence and general bad management on the part of the Egyptian authorities, and partly to misfortunes which it was impossible to foresee, the works have, on various occasions, and at different points of the line, been suspended. In laying down about 80 miles of line across the desert (from Suakin, and in the direction of Kassala), no less than 1,500 camels were allowed to die of starvation, and the two Englishmen who until lately directed the work in that part of the country fell, during the same period, victims to the effects of climate. An extensive gap in the line, between

Wady Halfa to Urdeh.

Wady Halfa and Urdeh, has been occasioned by the white ants which infest that region. It was found that no wooden posts could resist the ravages of these insects, which eat into, and in the course of a few hours effectually destroy, as far as the surface of the earth, any piece of timber that is fixed in the ground. 6,000 iron posts, to replace the wooden ones ordered from Europe several months ago, have not yet arrived.

Urdeh to Ambukol, to Berber, Shendy, and Kassala.

"From Urdeh, which is 260 miles distant from Wady Halfa, to Ambukol, that is to say, along a space of 120 miles, the line is completed, and it is in course of construction from the latter place to Berber, which is 170 miles further; from Berber to Shendy, 110 miles, and from Shendy to Kassala, 200 miles, there is nothing done. Of the remaining distance to Suakin, about 120 miles have yet to be laid down.

Keneh to Kosseir.

"From Keneh on the Nile, or Assuan, to Kosseir, or Berenice, on the Red Sea, there are regular caravan routes, and the distance between these places being incon-

" siderable, a line along one or other of the routes could be laid down in the course of a " few weeks. Such a project has frequently been entertained by the Egyptian Govern- " ment, but I do not believe there is any likelihood of its being carried into execution."

Proposed line by Kosseir.

It was subsequently proposed to establish a flying line by way of Kosseir, but this idea was also abandoned, as it was deemed impracticable to maintain a line intact which would pass unguarded through the wild tribes who inhabit the districts through which it would have to be laid.

Proposed submarine line from Suez.

A submarine telegraphic communication from Suez was also proposed by the Managing Director of the Telegraph Construction and Maintenance Company, but Sir Stafford Northcote was not disposed to enter into any arrangement for laying a cable down the Red Sea at the cost of the Government, with a view, as suggested, to ultimate extension to Bombay. He stated, however, that in the event of the Telegraph Construction and Maintenance Company themselves undertaking the construction of such a line at their own risk, Her Majesty's Government would be prepared to enter into an arrangement with them for its temporary diversion to Massowah, or some other suitable point during the continuance of military operations in Abyssinia.

Correspondence regarding the proposed line *vid* Kosseir.

Instructions to Lieutenant-Colonel Robinson.

Relative to the proposal to construct a line of telegraph, *vid* Kosseir, to Annesley Bay, Colonel Staunton telegraphed from Cairo on the 4th January, 1868, that the line was in operation only as far as Wadi Hálfa, *but that* the Viceroy had agreed to place all available material at the disposal of Her Majesty's Government, and to give every assistance in his power towards the construction of the proposed line. *On the receipt* of this information, the Secretary of State for India directed Lieutenant-Colonel Robinson, R.E., the Director of Indian Telegraphs, on the 10th January, to consult with the Consul-General, respecting the construction of this line, *and to await further orders* in Egypt. It was suggested to supply an insulated wire laid on the ground, and Colonel Robinson was directed to ascertain if the submarine wire between Suez and the Island of Jubal was in working order, and if it would be possible to negotiate with the tribes on the coast for the protection of a wire on shore between a point near Jubal and Annesley Bay?

Colonel Stanton wrote as follows to the Secretary of State for Foreign Affairs, on the 8th January:—

The Consul-General's Report of the 8th January.

" I have the honour to report, with reference to my telegraphic despatches to your " Lordship, of the 4th and 8th instant, that immediately on receipt of your Lordship's " instructions, I demanded an audience of the Viceroy, for the purpose of ascertaining " from His Highness to what extent the co-operation of the Egyptian Government could " be relied upon in affording aid in the construction of the proposed line of telegraph " along the shore of the Red Sea to Annesley Bay.

Assistance of Egypt.

" His Highness expressed himself as willing to give every assistance in his power for " the proposed object, and desired the Director-General of the Soudan telegraph " (Mr. Gisborne, an English Engineer), to place himself in communication with me for " the purpose of ascertaining the wishes of Her Majesty's Government on this subject.

Telegraph Material available at Alexandria.

" I requested Mr. Gisborne to inform me what amount of telegraphic material could " be supplied by the Egyptian Government, and I have this day ascertained from that " gentleman that there are about 900 miles of wire available at Souakin, and 6,000 iron " telegraph posts in store at Alexandria.

" These 900 miles of wire would probably be sufficient for the proposed coast line of " telegraph from Annesley Bay to Kosseir and thence to Keneh, where it would connect

Distance. "with the existing Nile telegraph. This distance is roughly calculated at about "850 miles, but without a regular survey it is not possible to give the actual mileage.

Telegraph Poles. "Mr. Gisborne could not give me any information as to the supply of telegraph poles "that could be depended upon at Suakin, and remarked that he had found the wooden "poles that had been supplied too heavy for transport, and strongly recommended iron "posts being employed, of which there were 6,000 in store at Alexandria, which would be "available for this service. Should iron posts be determined on, a further supply of "13,000 would be required, calculating them at 22 per mile, the number stated to me by "Mr. Gisborne as required.

Scarcity of Water. "One of the chief difficulties attending the construction of this line will arise from "the scarcity of water throughout the whole distance; and the problem as to how the "working parties employed in the construction of this line are to be provided with provi- "sions and water will require very careful consideration. The Viceroy informs me we "can secure a sufficiency of labour, and believes he can depend upon the chiefs of the "different tribes, through whose country the line will pass, for the maintenance of the "line when completed, but my own opinion on the subject is, that very serious difficulties "will arise, both in the construction and maintenance of this coast line, and I would "venture to submit to your Lordship that a submarine line from Suez to Annesley Bay "would probably be found to be more efficient than the proposed coast line, and at the "same time might be completed as expeditiously. I have reason also to believe that, in "case the coast line is determined on, it will be necessary to run a fresh wire from Cairo "to Keneh (the point of junction with the Kosseir line), a distance of upwards of "400 miles.

"I may also remark to your Lordship, in favour of the submarine line, that I am "informed the cable already laid from Suez to Jubal is ready for working."

And again on the 16th January, as follows:—

The Consul-General's Report of the 16th January. "I have the honour to report to your Lordship that Lieutenant-Colonel Robinson, "Royal Engineers, Director-General of Telegraphs in India, arrived here on the evening "of the 11th instant, and I have since been in constant communication with him on the "subject of the proposed line of telegraph along the shore of the Red Sea to Annesley "Bay. I have also placed Colonel Robinson in communication with Mr. Gisborne, the "Director-General of the Sudan telegraph, who has given all the information in his "power as to the extent of the co-operation that may be expected from the Egyptian "Government for this purpose; and in order to assist that officer to ascertain, as far as "possible, what resources might be found available for the construction of the proposed "coast line, I accompanied him to Suez on the 10th instant, for the purpose of making "further inquiries there as to the general nature of the coast between Kosseir and Suakin.

Difficulties in laying the line along the coast. "The result of these inquiries confirms me in my opinion that very great difficulties will "be experienced in following the line of the coast, though they do not bear out the "assertion of the Governor-General of the Sudan that neither water nor inhabitants were "to be found on the proposed line. The evidence of some Arabs who declared they had "visited the coast, was to the effect that there were inhabitants thinly scattered about, "and water to be found in certain places, but that no cultivation existed. I should, there- "fore, presume the inhabitants were merely wandering Arabs, from whom no assistance "either in transport or labour could be expected, and who would, moreover, be more "inclined to destroy the telegraph than to assist in its maintenance.

"It appears to me therefore, my Lord, that the most effectual means of having tele-

"graphic communication opened without delay, supposing the idea of a submarine cable "from Suez by Jubal to Annesley Bay is not approved, would be to press on the con- Line from "struction of the Egyptian Government line of telegraph, *viâ* the Nile, to Berber, thence Suakin to "to Kassala, Suakin, and Massowah. Massowah.

"The greater portion of the material required for this telegraph is already on the "line, and the country through which it passes is more thoroughly in the power of the "Government, and more within reach of its officers than the desert bordering on the "Red Sea. The distances are great, and upwards of 1,000 miles of telegraph have still "to be erected, but with good will and good management (the materials being mostly "already on the line) I believe this line might be completed in about three months.

"To ensure the work being done within that time, it will be necessary to organize, "without a moment's delay, a proper staff of workmen with European inspectors, so that "the work may be carried on simultaneously from several points; and I have begged "Mr. Gisborne to endeavour to make arrangements for the transport of the iron poles "now in store at Alexandria to Wadi Halfâ on the Nile, in order that the gap in the "line between that post and Berber may be forthwith made good, and I have reason to "believe preparations have already been made to send these stores to their destination "with as little delay as possible.

"I am also informed by Mr. Gisborne that it is expected the line from Suakin to Suakin to "Kassala will be ready in about one month; it will then only remain to erect the tele- Kassala. "graph between Kassala and Berber, a distance estimated at about 300 miles, and "between Suakin and Massowah, a distance of about 250 miles, and as stores sufficient "for both these distances are said to be actually at Souakin it will only be necessary to "provide for their transport to the required points, and to organize working parties for "the erection of the line between the above mentioned posts.

"I beg also to submit to your lordship, that when the line is completed it will be "absolutely necessary to have English telegraph clerks at the different stations to ensure "a proper transmission of the messages. I believe the Viceroy will not make any objec- "tion to the appointment of these clerks under the existing circumstances, but I consider "it would be advisable for Her Majesty's Government to have the entire control of the "line so long as the Abyssinian Expedition lasts, and for this it will be necessary to "enter into a special agreement with the Egyptian Government, specifying the terms "under which the working of the line is ceded to Her Majesty's Government.

"Pending the receipt of your Lordship's instructions on this subject, I shall endea- "vour to push on all the preparatory arrangements in this country, so that no time may "be lost in the completion of the line."

The reports of Lieutenant-Colonel Robinson, R.E., Director-General of Telegraphs in India, ran as follows:—

"The unexpected arrival of the 'Mooltan' and probable departure of the mails Lieutenant- "from England two days earlier than was expected compels me to report more hastily Colonel "than I could wish on the questions sent to me under your telegram of the 11th instant. Robinson's Report of the 15th January.

"Immediately after my arrival at Alexandria on the 11th instant, I started for "Cairo, and entered into communication with the Consul-General, Colonel Stanton, "Royal Engineers, C.B. I was by him introduced to Mr. Gisborne, Superintendent of "the Nile Telegraphs, and some Egyptian officers well acquainted, or professing to be "well acquainted, with the peculiarities of Nubia and Upper Egypt. The result of "these enquiries were to the effect, that there were ample stores in Egypt for the con-

Stores available for line to Suakin.

"struction of the line, Wadi Hálfa, *vid* Berber and Kassala, to Suakin and then to "Massowah, but that clerks, line men, and petty stores are needed. There are, accord- "ing to Mr. Gisborne, at this moment at Suakin—900 miles No. 8 wire. 20,000 single "insulators. 9 sets of Morse instruments, 19,800 dûm palms for poles.

"At Alexandria, 600 iron Siemens' poles, with double insulators to fit; and 25 "Morse instruments, and a considerable quantity of wire. These stores were got out to "construct the line between Wadi Hálfa and Berber, where the ravages of the white "ants are so severe that (they say) posts are destroyed in a single night.

"These stores are evidently sufficient to complete the line beyond Wadi Hálfa, I "have therefore urged their immediate distribution, and have told those concerned that "I am sure that the British Government is prepared to pay any extra expense incurred "from putting this line into order unusually quickly. Mr. Gisborne has promised to do "his utmost, and the Viceroy does the same. They are both much interested in getting "it done quickly, and will, therefore, doubtless, exert themselves. At the same time the "difficulties are great. Sir Samuel Baker travelled from Berber to Kassala, and from "Kassala to Suakin, and his description of the country is certainly not very encouraging. "I have, however, no doubt but that it is possible to erect and maintain the line, and, "therefore, recommend arrangements being made with His Highness's Government, "whereby we shall have the use of the first wire, working it with our own signals, pro- "vided it is put up rapidly.

Time required to complete the line.

"The time allowed cannot well be less than two months.

"I allow from Alexandria to Cairo	2 days.
"From Cairo to Assuan (first cataract)	8 „
"From Assuan they must be carried on camels 10 miles and again put on barges	1 „
"To Wadi Hálfa 250 miles	9 „
"Total	20 days.

"From Wadi Hálfa to Berber is 250 miles, and from Berber to Kassala 340	12 days.
"Kasala to Suakin about	16 days' march.
"To communicate with Suakin	*b* „

"So that under any circumstances, stores could not be laid along the piece between "Kassala and Berber under a month, and even with soldiers and forced labour it would "certainly take another month to erect the line.

"This is looking at the matter in the very best light. But from the little I have "seen of the Egyptian Government, I much doubt their completing this line under a "very much longer period.

"Regarding the other route, *i.e.*, by the route of the Red Sea,—

Coast Line.

"I was told at Cairo that there were no inhabitants, and no water along the "coast, and that a man had never been known to travel by land from Suakin to Suez "direct.

"If there were no animals and no water, nothing would be easier than to lay an "insulated wire on the ground in the manner suggested in your telegram. I could not, "however, accept so improbable a conclusion without satisfying myself from inquiries "made on the spot that such an extraordinary state of things existed.

"I therefore came on here yesterday, and the evidence I have obtained from Captain

"Chitty, of the late Indian Navy, who navigated this sea for 20 years, from Mr. Mignon, "late Indian Navy, who was in it for five years, from the Peninsular and Oriental officers, "Egyptian officers, and Arab pilots, is to the effect that there are Arab encampments all "along the coast at intervals at 8 or 10 miles; and that there are wells of water, but no "cultivation and no labour, as the Arabs will not labour. Some might be got from "Kosseir, and some from Berenice, but very little. Plenty of powerful Turks can be got "here (Suez). The Arabs are said to be, for Arabs, quiet and under two Sheikhs who, "if subsidized, could keep the line safe. The shore is said to be desert, sometimes flat, "at other times rocky and almost mountainous to the water's edge; with a guide a man "can travel (they say) the whole way from Suez to Massowah, following (generally) the "coast line. An aerial line would be liable to be destroyed by the violent sand storms "which occasionally prevail, the insulated wire (they say) can generally be buried in a "trench which it would not be difficult to excavate. A Frenchman is said to have "walked, a short time since, the whole way from Massowah to Suez. Altogether, a "coast line appears to be not impossible and may be very practicable, but we cannot "depend on information derived from mere sailors, and for a tract 900 miles long, if "trustworthy evidence is required for the purpose of laying a telegraph. The coast must "be visited and interviews obtained with the people and Sheikhs by a British officer duly "accredited and understanding what is required. Should the Government desire me "to go, I should like to be accompanied by Mr. Mignon, late Indian Navy, who speaks "Arabic, knows the sea well, and is now employed at Alexandria as Assistant Transport "Agent.

Labour obtainable.

Description of the shore.

Opinion on practibility of coast line.

"Such an examination and interview will unfortunately take time. It could only be "done by day, and the distance being 920 miles, would occupy at least a fortnight; "another week would be spent in returning to Suez, the nearest telegraph station; and, "after all, may be valueless.

"It therefore seems to me that the only dependable course will be to lay a cable "from Jubal to Massowah in the deep water of the Red Sea, slack and as clear of coral "reefs as possible. This cable could afterwards be utilized to connect Aden with Suez; "and if Aden be hereafter connected with Kurrachee, we shall have another line to India "thoroughly independent of that now existing, and of incalculable importance in the "event of a war with Persia or Turkey.

Cable from Jubal to Massowah.

"To recapitulate. The evidence I have obtained is to this effect:—

"The Viceroy has the stores for, and is anxious to construct an aerial line, *vid* the "Nile and Kassala, to Suakin and Massowah, through a very difficult and unhealthy "country (*vide* Baker), and could possibly, *i.e.*, under the *most favourable conditions*, "open it in two months, though, owing to peculiar difficulties, it would take a great "deal more.

Line to Suakin and Massowah.

"2nd. It does not appear *impossible* to run up a flying line along the coast of the "Red Sea, sometimes aerial, sometimes buried; but, before it can be attempted, local "investigation should be made of the peculiaries of the shore and people.

Coast Line.

"3rd. A cable can be laid with *certainty*, and possibly even in less time than "either of the afore-mentioned, if part be sent through the Suez Canal and part through "the Cape to Massowah or Suakin.

Cable.

"Lastly. There is no reason why a land line should not at once be run up between "Massowah and Suakin, and possibly further north, with the stores now at Suakin, "so as to reduce the time from Massowah to Suez by at least two days.

Suakin to Massowah.

"Lastly. There are, besides the 'Malabar,' at this port, or belonging to this "port, six steamers belonging to the Egyptian Steam Company, now employed by

Steamers available.

"Government, and sundry transport ships (a full list of which I will send by Messagerie "mail of the 19th), and a small steamer belonging to the Royal Navy called the "'Prompt,' which would be very valuable for a coast examination."

Lieutenant-Colonel Robinson's next Report was dated Cairo, 18th January, 1868:—

Lieutenant-Colonel Robinson's Report of the 18th January.

"In continuation of former correspondence of 15th instant, which I was unfortu- "nately obliged to hurry off earlier than I expected, I have the honour to report that "I hear that the piece of old Red Sea cable, between Massowah and Suakin, is in "sufficiently good condition to be easily repaired. I am making further inquiries on "this head, and, if favourable, you will have heard by telegraph ere this reaches you.

Suakin to Kassala.

"I am also glad to be able to report that the Egyptian authorities are pushing up "the telegraph stores from Alexandria as fast as possible, and that the portion between "Suakin and Kassala is reported to have been under construction for some time past. "This is very satisfactory, and it will certainly be a great gain if the Nile Valley "telegraph be soon in working order. At the same time, we cannot shut our eyes to the "fact that the normal state of the Egyptian official is rather apathetic; that his arrange- "ments are made and carried out in an irregular manner; that those who have to carry "on the work cannot be communicated with in much less than a month; and that agents "at that interval cannot be impregnated with the force and energy of those urging them "here to exert themselves to the utmost. Moreover, the climate is undeniably very bad, "especially to unacclimatized Europeans; and yet, without European superintendence, "they can hardly erect their lines in a state that will admit of their being worked. "For the above reasons, though I hope much, I do not expect to see the Nile Valley line "erected in half the time it might be, 2½ months, or maintained long together in working "condition.

Submarine Cable recommended.

"In regard to the broken cable at Massowah, it might be worth while, if she can be "spared, to send the 'Amberwitch' from Kurrachee, to look at it; and I propose writing "to Lieutenant St. John by to-morrow's mail, that he may see how the Massowah end is, "if possible.

"I believe that a good cable laid slack is the only plan that can really be depended "on. According to the charts, there is plenty of depth in the Red Sea; and if a cable "were laid from Suakin to Jubal, it could be utilized after the war, by extending it to "Aden, and eventually to India, whereby a very important alternative line would be "secured, altogether free of Northern and Eastern political dangers.

Coast line recommended.

"From all I can learn, and every additional item of information I could obtain at "Suez strengthens the opinion, I am sure that the better land line is by the coast. All "who know the coast agree in saying that there are Arab encampments or villages at "intervals of 10 or 12 miles; that the inhabitants, mostly fishermen, are civil and hospit- "able, and, not being numerous, would not require a heavy payment to induce them to "protect a line. The checking clerk of the Transport Service told me that he had "conversed with a Frenchman who had walked (18 months since) from Massowah to "Suez, and that the Arabs treated him very well. I am endeavouring to trace the "Frenchman, who is a sub-contractor on the canal. His evidence would be very valuable, "because he made the complete circuit, from Cairo up the line to Massowah, and back by "the coast. If all this be true, it will probably be the quickest way to run a flying line "between Jubal and Suakin as soon as material can be sent out; but, before it is "attempted, the coast should be examined by a competent person, who would, of course, "require a steamer for the purpose, and require three weeks for the purpose.

"The only steamers suitable, now in the Red Sea, are the two smaller steamers of "the Azeeziah Company (400 tons), the 'Prompt,' of 120 tons (the transport tender), and "the Viceroy's gun-boats. If the 'Prompt' be employed, it will be necessary to obtain "the sanction of the naval authorities. Captain Chitty, who was employed for many "years, or Mr. Mignon, also late of the Indian Navy, now in the Transport Agency, "would gladly accompany me, if the Right Honourable the Secretary of State wishes "me to carry out this investigation. Their knowledge of the language and people of "the Red Sea would be most valuable. Steamers available.

"If a cable be ordered, it would be possible to get the barges carrying it through "the Red Sea in five days. Contractors agree to do it.

"The steamers in the Red Sea are of all dimensions; six of those belonging to the "Azeeziah Company are now under charter for the Expedition; three are required for "pilgrims, but two of the former will shortly be available."

Lieutenant-Colonel Robinson's next Report was dated Cairo, 25th January, 1868:—

"I regret that it is not in my power to report much progress during the past week "until to-day, this being the fast, Ramadan. To-day is Bairam, and during the next two "days nothing will be done. After the 28th we may be able to get the Egyptian "Government to listen, and perhaps to issue orders, but with so effete a machinery it is "quite hopeless to get anything done energetically, especially at a distance from head-"quarters. Lieutenant Colonel Robinson's Report of the 25th January.

"Mr. Gisborne, the Director of the Sudan Telegraphs, has been at Alexandria "during the last week expediting the despatch of materials to the Upper Nile, but the "good effect of these exertions is destroyed in consequence of the order to send them by "rail to Cairo being rescinded. Now they are to come by boat, which entails the loss of "14 days in reaching Cairo, and if the same want of pressure prevails hereafter they will "not be distributed for the next three months. Delays in sending Stores.

"It is, however, but just to say that the rail has already more traffic than it can "conveniently carry; and, I may add, is so disgracefully worked that it bids fair to tumble "to pieces ere long for want of ordinary care.

"When these stores reach Cairo they will be at once pushed on to Assuan, the first "cataract; over this or past this they must be transported on camels, then again put on "board boats, and so to the second cataract. The further from head-quarters they arrive "the less attention they will receive; and if I may judge from the reputed state of affairs "in that part of Egypt, the prospect of that part of the line being completed within a "reasonable period is very, very small. I am well informed that in that part of Egypt the "troops and all the officials are greatly in arrears of pay, and no effort is made to send "them remittances, and for the sake of subsistence all Government employés are forced to "pillage the natives; that the Government, knowing how much it is their fault, connives at "this sad state of things; and, consequently, there is absolutely no Government or "police, and it has become most difficult to procure labour, camels, or any similar kind of "assistance.

"I confess that, under these circumstances, I am hopeless of the Nile Valley line "being constructed within six months, and that I fully anticipate that it will never be kept "in working order for many months together. Indeed, I believe that it will be worse than "useless, because it will disappoint whoever puts his trust in it. The coast line seems "more promising. The Government officials from whom I obtained the first information Nile Valley Line.

"reported it impossible to make the line, as there was no water and no inhabitants. This "is not quite the case. The Arab pilots I examined at Suez say there are both at moderate "intervals on the sea-shore, but that the coast is in many places difficult of access by "reason of coral reefs or shelving beach. An Arab of the Ababde tribe, a resident of "Keneh, whom I examined yesterday, says there is a good camel road from Kosseir to "Berenice, some miles from the coast, but no water for the first three days (say 60 miles) "march, excepting immediately after rain. Abdala Pasha (Englishman named Richards), "whom I saw to-day, tells me that he has travelled the country often, and that there is no "difficulty whatever as far as travelling goes, nor of maintaining the line if once con- "structed, provided the arrangements be made and the subsidies to chiefs be paid directly "by the British Government. If through the Egyptians, the payments will be uncertain "and the line cut. Altogether, I am of opinion that the line is practicable, though by no "means easy of construction and maintenance.

Submarine Cable.

"The remaining alternative is the cable laid in the deepest part of the Red Sea. "Moresby's survey and charts are the only data I can obtain bearing on this point. There "is a Report by Captain Pullen, which I understand gives further detail, but I cannot hear "of any one possessing a copy of the work in Egypt.

"According to Captain Moresby, the mid-channel of the Red Sea is over 200 fathoms, "a depth at which a cable would be safe, and at that depth coral reefs would not abound "if they exist at all. No intermediate stations would be needed, but even if required "there would be no difficulty in establishing them. The only thing against a good cable "is the expense of manufacture and laying, and before it should be incurred we must "weigh well what would be the advantages accruing from it.

"Commercially, I don't suppose it would be worth much. If connected with India it "would receive a good many messages, but at the expense of the Indo-European cable, for "I do not anticipate much increase in the number of Indian messages until Australia and "China are included in the system, when the increase of messages would be very great. "Politically, its value would be great, and may become invaluable, either in the event of "disturbances occurring in, or our friendly relations being interrupted with Persia, "Turkey, Russia, or any eastern State of Europe, or of the campaign in Abyssinia being "prolonged.

"Captain Arbuthnot, Sir R. Napier's aide-de-camp, who arrived here yesterday, com- "missioned to purchase remounts for the Abyssinian Force, tells me that, when he left on "the 16th, the latest information from England was of 18th December, and that Sir "Robert Napier was most anxious for the means of obtaining speedier communication "with England and Bombay.

"From what Captain Arbuthnot tells me of the condition of the Force, there appears "to be but little probability of its being moved forward for some time to come, and that, "if Theodore is able to hold his own against the rebels, it must remain in Abyssinia next "hot weather. This again may, and probably will, lead to still greater complications. "Public opinion here is to the effect that the Viceroy of Egypt is intriguing to seize "Abyssinia the moment we vacate it. These intrigues may embroil us with tribes now "disposed to be friendly, and thus, when we wish to vacate, we may find it impossible to "do so. Altogether, appearances are certainly in favour of a good trustworthy telegraph "being worth far more than its cost.

"At the same time, I hesitate to express an opinion as to how a cable should be "laid, or whether it may not be worth while to lay a light and less lasting cable, to save "the time that must be consumed ere a suitable permanent cable can be made, shipped, "and laid.

"On this point, Mr. Latimer Clark can give as sound an opinion as any one I "know.

"I consider, too, that it is of the utmost importance that the western shore of the "Red Sea, as well as the Red Sea itself, should be carefully examined by a competent "telegraphist, ere any decided action is taken.

"Such an examination might be compressed into a month or six weeks, and should be "undertaken immediately, before the heat becomes insupportable; a steamer of 350 tons "should be chartered, if procurable, or the Commodore might be able to spare one of the "three gun-boats now in Annesley Bay. Meanwhile, a cable might be commenced, of such "form as Mr. Latimer Clark should devise, but with a dialectric better adapted to a hot "climate than gutta-percha. The cable, if not wanted for the Red Sea, would serve some "other purpose. Supplies of land line stores should also be prepared, which, if not "required for Abyssinia, are sure to be wanted in India.

"Should a land line be decided on, I think it quite possible that the Viceroy may be "induced to lend us the spare stores he has now at Sonakin, until such time as we could "replace them from England; Colonel Stanton thinks he would not, but will ask him on "the resumption of business (Tuesday next). Mr. Gisborne thinks he would lend, but "would certainly refuse to sell.

"In the event of a cable being sent out, it could be sent through the canal in a chain "of barges, a certain amount being uncoiled as each set of barges is passed through the "locks. If a dialectric such as I have mentioned be employed, tanks would not be "required; the dynanometers, paying-out and picking-up apparatus, &c., could be sent "out overland, and fitted to the steamers to be employed, some time before the cable "itself is sent out. The staff should come from England. I could arrange for them "within a month of the cable approaching completion. Soundings should be at once "commenced on the track on which it is proposed to lay the cable."

Kosseir line abandoned.

Lieutenant-Colonel Robinson was, on the 24th day of January, directed to proceed at once to India, to give the Governor of Bombay all the information he could about Egyptian telegraph, and the idea of the coast line was abandoned, it having been deemed impracticable to keep the line intact when laid.

Field Telegraph in Abyssinia.

Field telegraph suggested.

On the 22nd of August the Secretary of State for India inquired of the Government of Bombay if a field telegraph was required, stating that, with the exception of bamboo poles, one could be sent from England. To this the Government of Bombay replied by a request that a field telegraph might be sent. Major Champain, the Director-General of the Persian telegraph, submitted the following Report upon the subject, and the Secretary of State for India gave his sanction to the proposed arrangements, and orders for the immediate collection of the several articles to be supplied in England. He further appointed Lieutenant St. John, R.E., to proceed in charge of the stores.

Major Champain's Report was forwarded to Bombay. It was as follows:—

Major Champain's proposals for a field telegraph.

"In compliance with your wishes I have the honour to submit an outline of the pre- "parations I consider it advisable to make for equipping a Field Telegraph Train for "service in Abyssinia.

"Since you first spoke to me on the subject I have consulted Captain Stotherd, R.E., "who is in charge of the Engineer Telegraph Class at Chatham. I have had access to

"Captain Weber's Reports on the Continental equipments, and I took advantage of my "recent visit to Paris to examine the Austrian Field Train, the details of which were "explained to me by the man in charge.

Simplicity and lightness. Main points.

"I am decidedly of opinion that in the present instance simplicity and lightness are "the main points to be looked to. The heavy carriages and elaborate appurtenances of "the Austrian and Prussian field telegraphs, adapted as they may be to a European cam- "paign, would prove utterly unsuitable to a wild, roadless country like Abyssinia.

"It must be borne in mind that in European warfare a Commander finds the general "system of telegraphs in each country ready to his hands. He has only to arrange for its "maintenance or repair, and on it he grafts his temporary branch lines. In Abyssinia we "must of course look for no assistance of this kind, and I would therefore propose that "stores should be supplied for two distinct objects.

"First.—For a semi-permanent aërial line from the port of debarkation, say Mas- "sowah, to whatever point in the interior might be selected as the head-quarters of the "Force.

"Second.—For flying lines to connect the head-quarters with the different out- "posts, &c.

Requirements for Semi-permanent line.

"The first or semi-permanent line may be calculated at about 300 miles in length, and "I would consequently provide material for 350 miles. For such a line 10,000 poles would "be amply sufficient, which, made of stout bamboos 18 feet long, could easily be obtained "and shipped from Bombay. I understand that a belt of forest divides the low land near "the coast from the plateau of Abyssinia Proper; and if this be the case insulators to carry "the wire could be fixed to the trees, and fewer bamboos would be necessary; but to avoid "risks it would be better to supply the 10,000 poles, and use them or not according to "circumstances. Bamboo supports over an open country will require no insulators, the "wire being passed over a notch at the top, but for forests or marshy land I would send "out a supply of 4,000 light insulators of simple construction. Half the number according "to a pattern which I saw at the Paris Exhibition for supporting a wire on living trees, the "rest for fixing with ease and rapidity on the top of the bamboo standards. Copper wire "presents so many advantages as regards conductivity, facility of manipulation, and "especially portability, that after much deliberation I venture unhesitatingly to recom- "mend its adoption in preference to iron wire. I presume that the question of carriage "will be of the first importance; and, judging from our experience in Persia, I do not "think that the one material would present greater temptation to marauders than the "other. The copper wire should be that known as No. 16, which weighs under 60 lbs. per "mile, and costs, I think, from 55*s.* to 60*s.* It should be ordered from Messrs. T. Bolton "and Sons, Broad Street, Birmingham, and must possess at least 85 per cent. of the con- "ductivity of pure copper. I would provide for use on this semi-permanent line, eight "of Siemens and Halske's lately improved recording Morse instruments, with portable "tables fitted up for writing. To the design and construction of these I shall imme- "diately turn my attention.

"To erect a line of the above description, keeping pace with the march of the Force "at say 20 miles a day, a company of Native Pioneers, or 150 ordinary coolies, would "suffice. To avoid the possibility of confusion, I would recommend that the necessary "tools, such as crowbars, borers, axes, rammers, and rope, should be sent from England. "Spades and pickaxes were in the first instance supplied for erecting the Persian perma- "nent telegraph, but were rarely, if ever, used; and should a few be required in the "present instance, doubtless they could be borrowed from the Engineer Park. I will, "after careful enquiry, submit an estimate of the number of baggage animals which will

" probably be required, and may then perhaps take occasion to add to or even alter
" some of the proposals put forward in this rather hurried letter. Of the organization
" of the Staff for working this semi-permanent line I shall treat in a future paragraph.

" The flying lines should in my opinion be laid on the ground. There are objections Requirements for a flying line.
" to this plan, but they apply entirely to European battle-fields, where the forces engaged
" number hundreds of thousands, and where the carts, waggons, and guns are innumerable.
" As a rule, a wire laid on the ground for a short time only would attract less notice, and
" be infinitely easier to put down and to pick up, get less in the way of cavalry, &c., and
" would not be one whit easier to damage wilfully than a line on poles. I would most
" strongly recommend for such work Hooper's india-rubber core of small diameter, with a
" strand conductor. Captain Stotherd informs me that he has seen a battery of Artillery
" drive over this core laid on a hard macadamized road, without doing it the smallest
" injury. India-rubber stands dry heat infinitely better than gutta-percha, and the cost is
" about the same. Probably 50 miles would be enough to send out. The Hooper's core
" must be carefully coiled, after manufacture, on drums made expressly for the purpose,
" the weight of each drum and coil not exceeding 140 lbs., so that one mule may carry
" two. This load may seem large, but I am informed on unimpeachable authority that
" none of the passes between Massowah and the interior can be compared in difficulty
" to the road between Bushire and Shiraz, where mules regularly travel 20 miles a day
" under loads of 300 lbs., in addition to the pack-saddle. Fifty mules would carry the
" whole flying line equipment, including Hooper's core, light tents, apparatus, &c.

" For these flying lines I am inclined to recommend the acoustic field apparatus of
" Messrs. Siemens and Halske, which after long trial in Persia have given great satisfac-
" tion. They are portable, easy of adjustment, and bear any amount of rough usage; but
" before finally deciding this point I should wish to make fuller enquiries, particularly as to
" the qualifications of the men we may expect to get from Chatham, the result of which
" shall be communicated in my supplementary report. The necessary stationery and forms
" for the field telegraph must be furnished from this country. I now come to the im-
" portant question of the best method of organizing the Staff to whom the working of the
" telegraph train is to be entrusted; and I would strongly advise that the control and
" superintendence of the whole department, including both semi-permanent and flying
" lines, should be placed in the hands of some Engineer officer who has not only had
" experience in practical telegraphy, but who has also been accustomed to the direction
" of Native working parties. Under this Superintendent should, I think, be appointed one
" Junior Engineer officer as Assistant-Superintendent in charge of the semi-permanent,
" and a second in charge of the flying lines; the former of whom at any rate should have
" served in the East. For the semi-permanent I would suggest that twelve European or
" Eurasian signallers, well accustomed to the Morse instrument, should be engaged and
" sent out from Bombay. These would be employed in the standing offices only, and I
" think that four European non-commissioned officers should also be sent from India,
" expressly to supervise the construction and maintenance of the aërial line. In selecting
" the latter I would look rather for steadiness, temper, and experience with natives, than
" for technical knowledge, which will really be scarcely required.

" The working Staff of the flying lines, under the Assistant-Superintendent mentioned Working Staff.
" above, should consist of at least twenty thoroughly trained non-commissioned officers or
" Sappers of Royal Engineers, from the Telegraph School at Chatham. This number
" could, I believe, be obtained without difficulty by application, through the Horse Guards,
" to Colonel Simmonds, the Director of the Royal Engineer Establishment, who could, I
" have no doubt, recommend an officer to accompany them as Assistant-Superintendent.

"An indispensable adjunct to the Field Telegraph Train will be an apparatus and special "Staff for day and night signalling by means of flags and cones, heliotropes and flashing "lights. I have never had an opportunity of studying the details of this method of tele- "graphic communication, but I know that the system in all its parts has been brought to "considerable perfection at Chatham; and if authorized I would place myself in commu- "nication with Colonel Simmonds, and report further on the steps which ought to be "taken. Such a system would be invaluable in communicating with the shipping from "land, and also in case of accidental breaks in the flying lines, or in situations where "some intervening obstacle might preclude the laying of the core. The officer and "men in charge of these apparatus should certainly be under the orders of the Super- "intendent of the entire Telegraph Train.

"The following Table shows that Staff and stores should be furnished from England "and Bombay respectively:—

"STAFF.

Staff.

No.	Rank.	Remarks.
1	Superintendent.	To take charge of the whole equipment.
		For Semi-permanent Line.
1	Assistant-Superintendent.	In charge, should be a Subaltern, R.E., from India.
4	Non-commissioned Officers.	To supervise construction and maintenance of aerial lines must be from India.
100	Native Pioneers or Sappers.	From India. If not to be procured 150 coolies will be necessary.
12	Signallers.	From India. European or Eurasian for service in the standing offices only.
		For Flying Lines.
1	Assistant-Superintendent.	In charge, should be a Subaltern, R.E., from Chatham.
25	N. C. O. and Sappers R.E.	To lay and work flying lines. The whole number to be obtained, if possible, from Chatham.
		For Signal Corps.
1	Assistant-Superintendent Staff.	Subaltern R. E. from Chatham, according to Colonel Simmonds' advice.

"STORES AND MATERIAL.

"FROM BOMBAY.

Stores and material from India.

No.	Detail.	Remarks.
10,000	Strong bamboos, 18 feet long ..	Of the kind usually employed for scaffolding in India.
1	Large double-poled tent	Office at Massowah.
3	Single-poled tents	For intermediate offices on semi-permanent lines.

"Tents for the Staff and workmen will, I presume, be supplied as for the rest of the "Force from Bombay.

"From England.

Stores and material from England.

No.	Detail.	Probable Cost.	Remarks.
		£	
350 miles.	No. 16 copper wire weighing about 60 lbs. per mile.	1,000	Conductivity 85 per cent. of pure copper, must be ordered from Messrs. Bolton, Birmingham.
500 lbs.	No. 8 iron wire for stays	10	
4,000	Insulators	500	2,000 of one pattern, 2,000 of another.
50 miles.	Hooper's core 8 strand at 45*l.* including drums, &c.	2,250	To be securely packed on drums, none to weigh more than 140 lbs., length to be marked thereon.
8	Siemens and Halske's portable recording instruments with batteries and stores complete.	400	For semi-permanent line.
12	Smaller instruments for flying lines complete.	300	Further details hereafter.
	Portable tables, pigeon holes, stationery, camp stools, and other office requisites.	200	To be expended in communication with the Stores Department at the discretion of the officer preparing the equipment in England.
	Tools, such as axes, saws, hammers, crowbars, rammers, rope, jointing, tools, &c.	100	Do. do.
5	Small tents with fittings	100	For officers of flying lines to be procured in London.
	Total probable amount of expenditure in England ..	£4,860	

"Stores and materials for Signal Corps according to Colonel Simmonds' recommendation:—

"Detail of the Number of Mules that will probably be required.

Number of mules required.

"For flying lines	50
"For semi-permanent lines	
"Carriage of copper wire	70
"Ditto insulators	13
"Tools, instruments, batteries, &c. ..	7
"Office tents, &c.	10
"Total	150

"For carriage of 10,000 bamboos it is impossible to give the details here. Arrangements must be made on the spot to reduce the requisite carriage to a minimum. Much would depend on the state of the country, and I need only remark, that unless wood is everywhere to be found on the line of march, some supports *must* be provided, and nothing lighter than bamboos can possibly be devised. Carriage would also have to be provided for the flashing light apparatus, &c.; and I would beg most respectfully to remark that the employment of camels or bullocks, in lieu of mules, for any part of the Telegraph Train, would in my opinion go far to diminish the efficiency of the equipment.

"In conclusion I would observe that if my proposals meet with the approval of the Right Honourable the Secretary of State for India in Council, I would undertake, in

"communication with the Director-General of Stores, to arrange for the supply of all the "material to be purchased in England within a month after receiving my orders. Great "activity and constant attention will be required to effect this, and I would most earnestly "beg that the services of Lieutenant St. John, R.E., now on leave in England, may be "placed at my disposal until everything has been shipped. Lieutenant St. John's three "months' privilege leave expires a week hence, but I have Colonel Goldsmid's permission "to state that he could be spared from his duties in Persia for this important work. "Lieutenant St. John has been constantly engaged, during the past four years, on the "telegraph between Teheran and Bushire. He has shown himself to be an officer of the "greatest zeal and capacity, and his practical knowledge of all the minutest details of such "work as that now under consideration will be of the greatest help to me. I would "further suggest that Lieutenant St. John be sent out from England in charge of the "various stores, and I am sure that were he appointed for telegraph duty with the "Force in Abyssinia, his recent experiences in a country not entirely dissimilar will "prove very useful.

Lieutenant St. John recommended to proceed in charge.

"With reference to the selection of officers and men from Chatham for service "with the Field Telegraph Train, I would venture to urge that a letter be written without "delay to the Horse Guards, desiring that steps should be taken to prepare Colonel "Simmons for the probable call upon the resources of the Royal Engineer Establish-"ment.

"The Government of Bombay will of course be informed of the measures decided "on here, and will be prepared to carry out their part of whatever plan may be "adopted."

10,000 bamboos applied for from Bombay.

The Secretary of State for India informed the Governor of Bombay on September 10th, that the stores which were required from Bombay would be only 10,000 strong bamboos, 18 feet long, of the kind used for scaffolding, and that all other stores would be provided within a month from England.

Number obtained.

Of the bamboos, 5,799 were received in Bombay by the 3rd February, 1868; of these, 4,920 were despatched to Abyssinia between the 25th December, 1867, and the 20th January, 1868, and the remainder, 879, were rejected as unfit for telegraph posts.

On the 18th of September, Major Champain submitted the following revised estimate of the stores required, with details of tools, &c. This provided for 50 miles of light homogeneous iron wire, for short lines, run up along the coast, or for reserve material for semi-permanent line.

Revised Statement of stores required for field telegraph, and their probable cost.

TABULAR Statement of Stores for the Equipment of the Field Telegraph Train.

Amount.	Specification.	From whom to be obtained.	Estimate of probable Cost. £ s. d.	Per	Probable Total Cost. £ s. d.
50 miles.	Hooper's core, 20 in diameter, consisting of three strands of copper wire, of not less than 85 conductivity, covered with india-rubber, &c., including drums and packing.	Messrs. Hooper, 7, Pall Mall East.	45 0 0	mile.	2,250 0 0
	Add three per cent. on the above, payable to Mr. Latimer Clark for testing the said core.	.. ..	..	..	67 10 0
350 miles, at 64 lbs. per mile = 22,400 lbs.	No. 16 W. G. copper wire of 13" standard, including joining in lengths of two miles and winding.	Messrs. Thomas Bolton & Sons, Broad Street, Birmingham.	0 1 2	lb.	1,306 13 4
175	Drums for winding the same	„ „	1 0 0	each	175 0 0

Statement of Field Telegraph Stores—*continued.*

Amount. Number.	Specification.	From whom to be obtained.	Estimate of probable Cost. £	s.	d.	Per	Probable Total Cost. £	s.	d.
4 cwt.	Iron wire, No. 8 gauge, in lengths of 30 feet, for stays.	Messrs. Siemens Brothers, Great George Street, Westminster.	2	0	0	cwt.	8	0	0
2,000	Insulators, each consisting of a cast-iron top, china insulator, and wrought-iron support, two hoop-iron bands, and 10 nails, packed in strong deal cases of 200 each, with compartment containing the following tools, viz., 2 hammers, 2 files, 2 pair cutting nippers, 2 gimblets, and 12 sheets emery paper.	,, ,,	0	2	6	each	250	0	0
2,000	Insulators, each consisting of one wrought-iron spike, one china insulator, with hook above and below, packed as above with similar tools.	,, ,,	0	2	6	,,	250	0	0
8	Portable recording relay instruments, in cases complete.	,, ,,	32	0	0	,,	256	0	0
12	Portable recording field instruments, in cases complete.	,, ,,	25	0	0	,,	300	0	0
12	Cases, each containing 12 "Marie Davy's" elements for field instruments.	,, ,,	0	15	0	cell	108	0	0
8	Cases each containing 24 ditto, ditto, for relay instruments.	,, ,,	0	15	0	,,	144	0	0
12	Portable cases, each containing one copper earth-plate, with connecting wires, one set of assorted repairing tools, 50 yards covered wire for connexions, six bottles of printing ink, 25 discs Morse paper.	,, ,,	8	0	0	,,	96	0	0
4	Cases, each containing one set of repairing instruments, one copper earth plate, 100 yards covered wire for connexions, 100 discs Morse paper, 12 bottles of printing ink.	,, ,,	10	0	0	,,	40	0	0
4	Magnetic field instruments, in cases complete.	Mr. Henley, 27, Leadenhall Street.	26	10	0	,,	106	0	0
8	Cases, each containing eight large size "Marie Davy's" elements for local batteries.	Messrs. Siemens Brothers, Great George Street, Westminster.	3	0	0	case	24	0	0
2	Galvanometers, in portable cases, complete for testing purposes.	,, ,,	8	0	0	each	16	0	0
100 lbs.	Pro-sulphate of mercury, packed in hermetically sealed tins of 5 lbs. each.	,, ,,	0	4	0	lb.	20	0	0
500 discs	Morse paper, for relay instruments	,, ,,	0	0	8½	each	17	14	2
500 disc	Morse paper, for field instruments	,, ,,	0	0	8½	,,	17	14	2
4	Lightning dischargers, with, each, two line plates	,, ,,	1	15	0	,,	7	0	0
100	Connecting screws	,, ,,	0	0	10	,,	4	3	4
72	Bottles of ink for instruments	,, ,,	0	1	6	,,	5	4	0
3 sets	Iron blocks and tackles, with 100 yards spare rope.	,, ,,	1	10	0	,,	4	10	0
50	Bill-hooks, in leather cases, for clearing thorns, &c.	,, ,,	0	10	0	,,	25	0	0
10	American axes, ditto, ditto	,, ,,	0	10	0	,,	5	0	0
20	Spare handles for the same..	,, ,,	0	1	0	,,	1	0	0
6	Earth borers, 3¼ inches diameter	,, ,,	0	12	6	,,	3	15	0
12	Earth scoops	,, ,,	0	2	6	,,	1	10	0
12	Hooks for fixing wire insulators	,, ,,	0	5	0	,,	3	0	0
56	Whistles	,, ,,	0	2	0	,,	5	12	0
25	Clasp knives, with lanyards	,, ,,	0	5	0	,,	6	5	0
6	Turnscrews	,, ,,	0	2	6	,,	0	15	0
12	Despatch bags, with straps..	,, ,,	1	0	0	,,	12	0	0
12	Two-wheeled barrows, for paying out and picking up wire, with tool box and grease pot attached.	,, ,,	12	0	0	,,	144	0	0

Statement of Field Telegraph Stores—*continued.*

Amount.	Specification.	From whom to be obtained.	Estimate of probable Cost.	Per	Probable Total Cost.
			£ s. d.		£ s. d.
100	Matheson's ebonite connectors	Silver & Co., 67, Cornhill ..	0 4 0	each	20 0 0
6	Portable bivouac tents	" "	6 0 0	"	36 0 0
6	Tables for the same	" "	2 0 0	"	12 0 0
12	Camp stools for the same	" "	0 12 6	"	7 10 0
6	India-rubber water bags	" "	1 0 0	"	6 0 0
20	Globe lamps, at 14*s.* £7 0 6	" "	..	..	10 6 8
50	Pair stout hedger's gloves, at 1*s.* 4*d.* .. 3 6 8				
50 miles	Galvanized homogeneous iron wire, 16 B. W. G., in coils of 135 lbs. each, packed in sacking.	W. T. Henley, 27, Leadenhall Street.	1 10 0	mile	75 0 0
	Assortment of stationery and printed forms (packing included). Details sent to Store Department.	Waterlow & Sons, Parliament Street.	..	..	55 0 0
1	India-rubber portable boat, 10 feet long, packed.	Mathews & Son, 58, Charing Cross.	..	..	25 0 0
6	Pocket compasses	Elliott Brothers, 449, Strand.	0 5 0	each	1 10 0
4	Field glasses, in cases, complete	" "	3 3 0	"	12 12 0
6	Portable clocks	Benson, 80, Ludgate Hill ..	3 0 0	"	18 0 0
		Total probable cost ..	..	..	5960 4 8

Five hundred ½-lb. rockets, with sticks, and 50 portfires, packed in boxes, not exceeding 100 lbs. weight, were also provided to accompany the field telegraph and equipment.

The weights of the stores for the telegraph were settled by the following letter from Major Champain to the Under Secretary of State for India:—

Arrangements for weights of packages.

"I have the honour to acknowledge the receipt of the letter of the 20th instant "from the Military Secretary. It refers to the weight of packages of telegraph stores "which are now being prepared for Abyssinia.

"In my letter of the 3rd instant, I suggested that the drums, &c., which are each to "form half the load of a mule, should not exceed 140 lbs. in weight; and, when issuing "orders to the manufacturers, I reduced this standard to 135 lbs.

"My reasons for naming this as the proper half load of a mule were derived from "the experience of myself and of my officers during the past four or five years, while "constructing the telegraph in Persia.

"Many thousand mule-loads of wire and insulators have been sent up the country "from Bushire, and distributed along a distance of 1,200 miles, and in every case 300 lbs. "was considered the fair burden for one animal.

"At least this weight, in addition to the pack-saddle, is regularly carried by a Persian "mule, over passes probably as difficult as any in the world, at a rate of from 15 to "20 miles a day.

"To load a mule too lightly is undoubtedly a mistake. He is likely to give trouble "on the march, and trots down steep inclines, thereby shaking and disarranging his "burden. But a more serious objection is that, by diminishing the load, the number of "baggage animals is increased, and in this particular instance the trouble and time

"requisite to join up lengths of wire would be exactly doubled by adopting 80 lbs. "instead of 140 lbs. as the standard half load.*

"Although I am sure that with ordinary mules (carrying common pack-saddles) "280 lbs. would not be too heavy, yet I am so anxious that the trouble of re-arranging "weights after landing the stores should not be risked, that I venture to propose that I "may be authorized to communicate with the manufacturers of core and wire, and to "request them to reduce the drums to 120 lbs.

"Other packages might at the same time be brought down to 100 lbs."

Wire available from Calcutta.

Before it was known in India that the telegraphic apparatus would be supplied from England, some preliminary preparations were made by the Director-General of Telegraphs. The following wire could have been supplied from Calcutta:—

7	miles,	weighing	400 lbs.	per mile,
446	„	„	320 „	„
618	„	„	160 „	„

As the insulators in store were not suitable for military operations on account of their great weight, and the size of the collars of the brackets used for them, insulators were indented for on England.

Assistant-Superintendent and 12 signallers sent from Bombay.

Terms on which signallers were sent.

Outfit.

As the telegraphic arrangements, however, were made in England, a very small establishment was required from India, and one Engineer officer and 12 signallers only were asked for from Bombay to make the line complete for a distance of 450 miles. As no Engineer officer was available, an Assistant-Superintendent of Telegraphs, Mr. Browne, was sent. Signallers were engaged and received a free outfit of warm clothes. They were supplied with office servants, and were to receive free rations and an allowance of 15 rupees a-month each, in addition to their ordinary pay and allowances; the outfit given to each was:—1 cap, 1 cloth coat, 1 serge ditto, 1 cloth pair of trousers, 1 serge ditto, 2 flannel shirts, 2 pair ammunition boots, 1 great coat, 2 blankets, and 1 waterproof sheet.

Assistant-Superintendent's pay.

Mr. Browne's pay was 400 rupees a-month, and according to the rules of the Department he was entitled to a travelling allowance of 5 rupees a-day in addition from the time he landed.

An additional Assistant-Superintendent and 6 signallers sent.

As the line was extended in Abyssinia more signallers were required, and on the 1st February an additional Assistant-Superintendent, Mr. Hervey, and six signallers were sent on similar terms.

Besides these signallers, four European Sapper non-commissioned officers from the Engineering College at Roorkee, were ordered to Abyssinia, to aid in the construction and maintenance of the line. Although these men were applied for in September, yet owing to some complication between the Military and Foreign Departments, they did not arrive in Annesley till the 6th of February, the day on which the telegraph line was completed to Senafè. No working parties for the construction of the telegraph were sent from India. These were furnished in Abyssinia by detachments of troops.

* Taking 20 lbs. as the weight of the naked drum, in the former case 60 lbs. of wire would be carried, in the latter 120 lbs.

Army Signals.

Army signallers.

A requisition was sent from Bombay on the 3rd September, 1867, for a body of signallers to be sent to Abyssinia, trained to the new system of army signals, under a subaltern, with telescopes, codes, and signalling apparatus.

Signal establishment.

A Lieutenant of Royal Engineers, with one serjeant, and nine rank and file of the Royal Engineer Train were accordingly selected as army signallers, and put through a course of training at the Royal Engineer Establishment, at Chatham.

Signal apparatus and cost.

The following was the signal apparatus sent to Abyssinia with its cost, as supplied by Messrs. Nunn & Co., Saint George-street, London Docks:—

No. 1.—*Ship and Shore.*

	£	s.	d.
2 shutter apparatus 8-mile range, 36 feet area, complete with guys and pickets	54	10	6
4 cones, large size, complete, with halyards	29	10	0
2 30-inch telescopes, at 6*l.* 6*s.*	12	12	0
3 pairs field glasses, at 2*l.* 2*s.*	6	6	0
4 Chatham lights, at 10*l.*	40	0	0
4 oil cases, at 12*s.*	2	8	0
4 spirit cases, at 12*s.*	2	8	0
4 Chatham powder flasks, at 13*s.*	2	12	0
4 hand lamps, at 30*s.*	6	0	0
4 cases matches, at 2*s* 6*d.*	0	10	0
4 cases of wicks and scissors, at 8*s.*	1	12	0
4 cases, packing, &c.	5	12	0

No. 2.—10 *Chief Stations.*

10 Chatham lights, 5 to 14, at 10*l.*	100	0	0
10 foghorns and spare tongues, at 17*s.* 6*d.*	8	15	0
30 flags, at 10*s.*	15	0	0
10 spirit cases, at 12*s.*	6	0	0
10 oil cases, at 12*s.*	6	0	0
10 Chatham powder flasks, at 13*s.*	6	10	0
10 hand lamps, at 30*s.*	15	0	0
10 pairs field glasses, at 2*l.* 2*s.*	21	0	0
10 portable offices, at 1*l.* 13*s.*	16	10	0
10 packs, with straps, yokes, and waist belts, complete, at 1*l.* 12*s.*	16	0	0
10 ditto ditto ditto at 1*l.* 13*s.*	16	10	0
10 sets of poles, cases, and straps, complete, at 17*s.*	8	10	0
10 cases of wicks and scissors, at 8*s.*	4	0	0
10 cases of matches, at 2*s.* 6*d.*	1	5	0
10 tomahawks and leather cases for ditto, at 8*s.*	4	0	0

No. 3.—10 *Store Stations.*

10 5-gallon spout cases, at 28*s.*	14	0	0
10 Chatham powder cases, at 14*s.*	7	0	0
10 cotton tents, at 47*s.* 6*d.*	23	15	0
10 water decks, at 35*s.*	17	10	0
20 saddle bags, at 3*s.* 6*d.*	3	10	0
10 kitcheners, at 23*s.*	11	10	0
10 stationery cases, at 10*s.* 6*d.*	5	5	0
60 spare tongues for foghorns, at 3*s.* 6*d.*	10	10	0
10 sets selected tinman's tools, at 3*l.* 10*s.*	35	0	0
10 2-gallon oil cases, at 8*s.* 6*d.*	4	5	0
10 pairs panniers, with handles, at 3*l.*	30	0	0
8 cases packing, &c.	11	4	0

No. 4.—50 Small Equipments.

	£	s.	d.
50 hand lamps, at 30*s.*	75	0	0
50 foghorns, at 14*s.*	35	0	0
50 bandrols, with jointed staves, at 12*s.*	30	0	0
50 oil cans and wicks, at 3*s.* 6*d.*	8	15	0
1 case packing, &c.	1	8	0

No. 5.—Depôt Stores.

150 lbs. Chatham powder, at 30*s.*	225	0	0
100 gals. prepared spirits, at 8*s.*	40	0	0
100 „ oil, at 6*s.*	30	0	0
12 cypher wheels, at 20*s.*	12	0	0
1 set large tinman's tools	10	10	0
2 tomahawks and leather cases, at 8*s.*	0	16	0
1 box, wicks, and scissors	0	8	0
1 large case matches	2	0	0
„ cotton wick	1	0	0
3 50-lb. Chatham powder magazines	7	15	0
50 message books, at 5*s.* 2*d.*	12	18	4
4 50-gal. casks, brass taps, and screws	13	0	0
3 cases, packing, &c.	4	4	0
Total cost	£1092	4	10

The above-mentioned signal apparatus included everything necessary for signalling between ships and shore, for fitting-up the signalling detachment, and for extending signals to brigades, regiments, and corps, with all material necessary for six months' work, excepting lamp oil, of which, however, a good supply was taken for immediate use.

On arrival in Abyssinia the Signal Equipments were divided into mule loads, as follows:

Signal equipments distributed in mule loads, as carried in Abyssinia.

3 stations, depôt, 18 small stations, and stores for 6 weeks	6 mules.
3 stations (without spare stores), stores for 6 weeks	3 mules.
3 stations, day signalling only	1 mule.
3 stations, depôt, 18 small stations, and stores for 6 months	10 mules.

The signal equipments for 3 complete stations and a depôt, with apparatus for 18 small stations for infantry for day and night signalling, could be carried on 6 mules, as follows—3 mules carried each the following articles:—

2 panniers, with lock and key.
1 5-gallon spirit case.
1 stationery case.
1 case for Chatham powder.
6 spare tongues for fog-horn.
1 2-gallon oil case.
1 tent, small signal, with poles and pegs complete.
1 bag for tent.
1 water deck.
1 set cooking utensils, belonging to equipment, but not proposed to be carried beyond Antalo, except the following articles:
1 saucepan.
1 gridiron.
1 frying pan.
Set tinman's tools for repair of lamps, &c.
1 anvil.
1 brass sheet.
1 chisel.
1 pair compasses.
1 hammer.
1 mallet.
1 pricker.
1 punch, half round.
1 rasp.
1 pair scissors.
1 soldering iron.

6 bars of solder.
1 stove.
6 sheets of tin.
1 can soldering liquid.
24 rockets in cartouch.
1 large size pack, with straps complete.
1 yoke.
1 pair great-coat straps.
1 waist belt, with 2 studs and side straps.
1 Chatham lamp.
1 hand lamp.
1 spirit case.
1 oil case.
2 rockets.
1 case, with wick and scissors.
1 tomahawk and case.
2 rocket sticks.
1 small size pack, with straps complete.
1 yoke.
1 pair great-coat straps.
1 waist belt, with 2 studs and side straps.
1 powder case.
1 fog horn and spare tongue.
3 flags.
1 pair bellows.
1 pair field glasses.
1 portable office.
1 case matches.
1 set of poles, &c., for flags and lamps.
1 set of slings and straps.
1 memorandum book.
2 packets matches (dozen).
¼ quire foolscap.
3 Faber's leads (⅓ dozen).
30 parchment codes.
4 code books.

No. 4 Mule carried—

2 panniers, with locks and keys.
1 5-gallon spirit case.
1 case Chatham powder.
1 2-gallon oil case.
48 rockets.
1 set poles for tents.
2 water decks.

No. 5 Mule carried—

1 set cooking utensils (spare).
1 set tinman's tools (spare).
1 large size pack, complete.
6 Chatham lamps.
2 hand lamps
1 spirit case.
1 oil case.
2 cases, with wick and scissors.
4 bags.
2 tomahawks and case.
1 small size pack complete.
1 powder case.
1 fog horn.
3 flags.
1 pair bellows.
2 pair field glasses.
24 message books.

No. 6 Mule carried—

18 sets of banderols and sticks.
18 hand lamps.
18 cases for oil.
18 code books.
36 parchment codes.
3 sets poles for flags and lamps.
1 lot brass solder.
4 bags.
14 cotton wick balls.
9 fog horns.
36 fog tongues.
1 coil, brass wire.
2 files, square.
1 pliers.
1 quire blotting paper.
1 case matches, large.
2 boxes nibs.
1 dozen pencils.
100 envelopes.
3 satchels for messages.
1 hand axe.
1 felling axe.
1 pickaxe.
1 shovel.

The equipment for 3 complete stations, without spare stores, but with means of repairing damages, were, as detailed above, for the first 3 mules.

The equipment for 3 complete stations for day signalling only, was carried on one mule as follows :—

3 sets of flag poles, large.
6 " " small.
12 large flags.
12 small flags.
12 code books.
12 message books.
3 portable offices.
1 tent, small signal.
1 set poles and pegs.

The articles of equipment for 3 complete signal stations, with depôt and stores for 18 small stations for six months' use, required 10 mules to carry them, distributed in the following manner :—

Carried by 6 *mules.*

12 panniers and locks.
5 5-gallon spirit cases.
3 cases Chatham powder.
3 large camp kettles, with lids and straps.
3 large saucepans.
3 small saucepans.
6 cups.
6 metal plates.
6 enamel plates.
3 kettles.
3 ladles.
3 gridirons.
3 frying-pans.
6 spoons.
2 knives.
6 forks.
5 2-gallon oil cases.
3 tents.
3 poles and pegs for tents.
3 bags for tents.
6 water-decks.
3 anvils.
3 brass sheets.
6 chisels.
3 pairs compasses.
3 hammers.
3 mallets.
3 prickers.
3 punches.
3 rasps.
3 pairs sciasors.
3 soldering irons.
18 bars solder.
3 stoves.
24 sheets tins.
3 cans soldering liquid.
144 rockets in cartouch.
3 large-size packs and straps complete.
3 yokes.
3 pairs great-coat straps.
3 waist-belts.
6 Chatham lamps.
15 hand lamps.
3 spirit cases.
3 oil cases.
6 cases with wick and scissors.
3 tomahawks and case.
3 small size packs, with straps complete.
3 yokes.
3 pairs great-coat straps.
3 wrist belts.
3 powder cases.
15 fog horns.
9 flags, large.
3 pairs bellows.
6 pairs field glasses.
3 portable offices.
3 cases matches.
6 sets poles for lamps and flags.
6 sets of slings and straps.
90 parchment codes.
20 code books.
24 message books.
12 bags.
18 cotton-wick balls.
36 spare fog horns' tongues.
24 small flags.
24 small poles for flags.
3 satchels.
12 cases matches.
3 memorandum books.
6 dozen match-boxes.
$\frac{3}{4}$ quire foolscap.
9 faten leads ($\frac{1}{4}$ dozen).
3 pickaxes.
3 shovels.
3 hand axes.
3 felling axes.
3 hand saws.

The depôt stores were carried by 4 mules, as follows:—

6 panniers with locks and keys.
1 5-gallon spirit case.
1 stationery case.
1 case Chatham powder.
1 set cooking utensils complete.
1 2-gallon oil case.
1 tent, pole and pegs, &c., complete.
2 water-decks.
1 set tinman's tools.
1 large stove.
144 rockets.
1 large size knapsack and stores complete.
1 small do. do.
1 Chatham lamp.
4 hand lamps.
2 pairs field glasses.
100 parchment codes.
36 code books.
36 message books.
1 bench vice.
2 files, square.
8 oil cases for small lamps.
1 clock.
1 set entrenching tools.
1 set collar maker's tools.

The chief weight of the signal equipment was owing to the Chatham lamps, and the stores required for them. The small hand lamps were effective up to three-quarters of a mile in clear weather. The stores carried on No. 6 mule were principally for the use of infantry regiments and their outposts.

Under the arrangements as above detailed, the mule loads were distributed and signalling stores carried with the army to the extent required.

Code of signals.

A code of signals, for the Signal Detachment, was prepared under the direction of Colonel Simmons, at Chatham, by Commander Colomb, R.N., and Captain Bolton, 12th Regiment. The object of this confidential code was to enable communication to be made between ships and troops acting on shore. It contained also a Boat Signal Book, and comprised a code of signals for the use of the Forces on shore. Orders were issued that every possible precaution was to be taken to prevent this confidential code falling into the hands of any person for whose use it was not intended.

Otago saddles.

Otago saddles were supplied for the carriage of the army signal apparatus, and did excellent service in that regard.

The telegraph stores and signalling apparatus, except such of the latter as was taken by the army signallers themselves, were delivered into and packed at the India store depôt. The telegraphic stores weighed about 25 tons, but in bulk exceeded 40 tons, at the rate of 40 feet to the ton.

Formation and organization of the 10th Company, R.E.

The telegraphers sent from England, together with the photographers, army signallers, and well sinkers, were amalgamated into the 10th Company Royal Engineers, at the recommendation of the Field-Marshal Commanding-in-Chief, who was of opinion that it would be better for the interests of the public service, and the maintenance of discipline, that the detachments of Royal Engineers under orders for the duties referred to should be amalgamated into a company of reduced strength, under the command of a Captain of the corps (well acquainted with its financial system and interior economy), and two Lieutenants, instead of proceeding, as intended, in a series of unconnected detachments, each commanded by a subaltern.

The additional men required to complete this arrangement provided a reserve to meet casualties in the special detachments, and a small number of skilled artizans and miners, available for extra duties and fatigues, or for the construction of mechanical appliances, and mining or blasting operations.

Under this arrangement the company was formed, placed under a Captain and 2 Lieutenants, and consisted of the following establishment:—

	Colour Sergeants.	Sergeants.	Corporals.	2nd Corporals.	Lance Corporals.	Buglers	Sappers.	Total.
Photographers ..	..	1	1	1	2	..	2	7
Telegraphists	..	1	3	9	4	..	8	25
Signallers	..	1	1	1	1	..	6	10
Officers' servants ..	..	..	..	..	..	..	3	3
Well-sinkers	..	1	2	2	..	..	16	21
Artisans, miners, &c. .	1	1	..	..	..	2	13	17
Total	1	5	7	13	7	2	48	83

Departments under which the 10th Company, R.E. worked in Africa.

On arrival in Africa the 10th Company Royal Engineers were placed in all regimental details under the Commanding Engineer. In the construction of wells and lines of telegraph, they were to apply for all professional assistance to the Chief or Senior Engineer Officer. The lines on which telegraphic communication was to be established were decided on in the Quartermaster-General's Department, with which Department also rested the direction of the telegraph. The photographers and signallers also were placed under the orders of the Quartermaster-General's Department.

Prosser's lime light.

Three sets of apparatus for using Prosser's lime-light were supplied, at a cost of 350*l.* each. These the Army had never any occasion to use.

This apparatus consisted of a large vertical lens, opposite the focus of which was an ordinary lime-light, the permanence of which is secured by an arrangement of clock-work. It was very easily adjusted, and with all appurtenances did not exceed a mule load.

It seemed likely to be useful in warfare, particularly in a hilly country, for it was stated that, erected on any commanding position in the camp, it would enable an officer to inspect almost as clearly as if on the spot any part of his ground within a mile and a half radius. In case of a night attack, its light could be thrown instantly on any point from which suspicious noises might proceed, and would not only enable guns or rockets to be laid on any point as easily as in the daytime, but would show at once the effect of their fire. In fact it would be to a commanding officer much what his bull's-eye lantern is to a policeman.

Lieutenant St. John, with the telegraph, signalling, and photographic material, and 2 officers and 65 non-commissioned officers and men of the Engineers, sailed in the "Mendoza" on the 4th November, and reached Alexandria on the 21st. The remainder went by the Southampton packet, and reached Alexandria on the 24th November. All were immediately passed through to Suez, and embarked at the beginning of December for Annesley Bay. From Lieutenant St. John's Report, it appears that as originally organized in England, the Field Telegraph arrived at Zula divided into three branches:—

Organization of Telegraph Department.

(1) An ordinary aerial telegraph, for use on the main line of communications, to be worked by civilians from India.

(2) A flying superterranean line, for employment on the line of march, or in action.

(3) An equipment for night and day signalling; the two last being worked and superintended by officers and men of the Royal Engineers. Circumstances led to the partial amalgamation of the first two branches, and the complete separation from them of the third.

Want of carriage for the transport of the heavy material of the flying line prevented its accompanying the advance of the Army; and as the permanent line was pushed towards the front, the services of the telegraphers of the Royal Engineers became

indispensable to its construction and maintenance. These required the constant supervision of Lieutenant St. John, and thus the Signal Department remained almost from the first under the sole charge of Lieutenant Morgan, R.E., whose premature death deprived us of the valuable fruits of his experience.

Landing in the country, and obstacles to the commencement of work.

On the 12th December, Lieutenant St. John landed at Zula, having with him the complete establishment and equipment for the flying telegraph and army signals, and all material, except posts, for the semi-permanent aerial line. For the construction of the latter, orders had been sent by the Secretary of State for India to Bombay for the supply of 10,000 bamboos.

An establishment of an Assistant-Superintendent, four Public Works Overseers, and twelve Signallers, had been also ordered from Bombay. When the telegraphic material reached Zula, neither establishment nor bamboos had arrived. A day or two afterwards, however, the Assistant-Superintendent of the Indian Telegraph Department, with twelve signallers, landed in Annesley Bay, and an establishment was thus furnished for working the line before men or material to construct it had arrived. On the 6th February, the day the line was completed to Senafe, the four overseers applied for in September landed in Zula from Calcutta. It was suggested to use the telegraphers and signallers of the Royal Engineers as a working party for the construction of the line, but they suffered so severely from the climate that this was not done, and they, with a portion of their material, were sent on to the Advanced Force, then at Senafe. In the meanwhile, the telegraph had to be pushed to the front without delay, and a small working party of Madras Sappers was employed in erecting a line towards Kumayli, on teak poles, furnished by the Commanding Engineer at Zula. After these were put up, the line to Antalo was stretched on supports, cut or purchased on the road, with the exception of 700 bamboos, which were brought up by native carriage, a costly mode of conveyance.

Progress of construction.

On the 24th December, Lieutenant St. John commenced erecting the line from Zula, with a small working party of Madras Sappers. On the 7th January, communication was completed to Kumayli. On the same day, the services of a company of the 23rd Punjab Pioneers were placed at his disposal, in lieu of the Madras Sappers. By them the line was completed to Suru on the 26th January, to Undul on the 2nd February, and to a point three miles north of Rahagedi on the 6th. To this point, in the meantime, Lieutenants Morgan and Puzey, with the telegraphers and signallers of the Royal Engineers, had completed the line from Senafe. On the 12th work recommenced towards Adigrat with the Pioneers, Lieutenant Puzey being sent with his party of telegraphers to that place to work back towards Senafe. On the 1st March, the line was completed to Adigrat, and for eight miles further on the Antalo road. At Adigrat, the Pioneers were replaced by a party of Lascars from various Departments; with them the line was completed to Antalo on the 2nd of April.

Completion of line.

Description of line.

For six miles from Zula the line passed through tolerably open country on teak poles brought from Bombay.

Zula to Senafe.

From this point to Senafe it was supported on rough posts cut from the surrounding mimosa jungle. In many places, the wire was supported on insulators fixed to trees along the road, and in the Suru defile to the sides of the rocks. The natural difficulties of the country from Zula to Senafe, which presented little but a succession of thorny jungle, rocky precipices, and torrent beds, rendered the construction of this line tedious, and the maintenance of communication on it precarious.

Senafe to Antalo.

From Senafe to Antalo the country was generally favourable, and a rate of construction of from four to five miles a day was easily attained.

Difficulty in obtaining poles.

The difficulty of procuring timber for supports was the sole obstacle to more rapid progress. Poles which would, under ordinary circumstances, have been considered fit for telegraph purposes, were nowhere obtainable; and it was occasionally necessary to use mere sticks, purchased by the Advanced Force, of which a tripod was requisite to bear the strain of the light copper wire. The officer in charge was fortunately able to procure native carriage for about 700 bamboos from Zula, without which it would have been impossible to have brought the line up to Antalo.

Railway telegraph.

In addition to the main line from Zula to Antalo, 197 miles in length, a telegraph was constructed along the railway to Kumayli, and a second wire erected through the pass from Kumayli to Undul, raising the total length of wire put up to 234 miles.

Maintenance.

Great as were the difficulties experienced in the erection of the line, they were trifling in comparison with the labour of maintaining it. For reasons already noticed the line was exceptionally slight, and was from first to last exposed to injury. Carts and camels, elephants and camp followers, apes and Abyssinians, all contributed in varying proportions to the interruptions. The pilfering propensities of the natives caused the largest number, and the most difficult to repair, as, according to the reports from Lieutenant St. John, they not unfrequently stole the wire by a thousand yards or more at a time. To secure the prompt re-establishment of communication, the line was divided into twelve sections corresponding to the telegraph stations, and placed in charge of non-commissioned officers of Sappers or Engineers as inspectors, with parties of Lascars with mules, to start out at once on the occurrence of a break. By this means communication was fairly preserved, though the wire was said to have been broken in one or other of the sections three or four times a-day, and never remained unbroken throughout for more than twenty-four hours together. Thus the labour of the inspectors in charge of the various sections was constant and severe.

Traffic.

The traffic on the line was at first small, but by the time communication was completed to Adigrat, it increased to such an extent that it became necessary to limit the power of sending despatches by telegraph. This produced a considerable reduction in the number of messages between intermediate stations with beneficial effect on the through traffic.

Messages sent.

Owing to the frequent interruptions, the number of messages that were repeated at intermediate stations was large. The longest message sent was of 1,160 words; the shortest, of one word. The news of the fall of Magdala was known in Zula a few minutes after the arrival of the messenger with the tidings in the Camp at Antalo.

The services of a naval officer were placed at the disposal of the Telegraphic Department, to superintend the landing of stores. That work being finished, he was employed in erecting a second line from Kumayli to Undul Wells and in repairing the original wire.

Former telegraph lines.

Hitherto all telegraph lines erected in war have been short branches, grafted on existing systems, the working and organization of which had thus simply to be extended for a few miles to maintain the ordinary standard of efficiency. Running, as a rule, along lines of railway or frequented roads, they would be no more liable to accident or interruption during war than at other times, and the means for repair would be ready and at hand.

Difficulties in Abyssinia.

In Abyssinia neither roads nor telegraphs existed before the Expedition; the conditions of erection were entirely unknown; the weight of all material was necessarily reduced to a point lower than had been previously reached; the line was constructed and worked through a physically difficult country, with a small proportion only of this material, and, without guardianship of any sort, was exposed to the vicissitudes a line always experiences in a barbarous country. The weakest point in its construction was

undoubtedly the size of the poles bought in the country, which it was necessary to accept for supports. After the natives were deterred by the threats of the Governor of Antalo from stealing the wire, no interruptions took place on the line between Dolo and Antalo until the evacuation of the latter place, a period of about six weeks. This part of the line was erected almost entirely on the bamboos, which, had carriage been available, would have formed the supports throughout. This is sufficient to show that the original material was in no way to blame for the frequent interruptions which the line suffered.

Experience gained.

The experience gained in the Expedition may be summed up in the few words that a military line, instead of being exceptionally slight, should be as solid and strong as it can be made, as it is exposed to more dangers than an ordinary telegraph. The fact of its being carried by the road forming the main line of communication, is a weakness, not a strength.

Disposal of wire.

All the wire stretched in Abyssinian territory was taken down and brought to the sea. The rapid marches through the Pass alone prevented our bringing away the line from the Egypto-Abyssinian frontier.

Army signallers.

During the month of January the signallers were posted at Senafe, and regularly practised in signalling. In February, 10 non-commissioned officers and men of the 33rd Regiment were attached to the 10th Company Royal Engineers, and instructed in the use of flags for the purpose of signalling by day. The Engineer signallers were practised occasionally with the night signals. In March, the signallers proved useful on several occasions in communicating and passing orders from the first to the second brigade, when one march distant from each other. They were also useful during the operations before Magdala, where they passed signals between the different portions of the force. On the return march little opportunity offered for their employment.

The telegraphers and Army signallers being under the control of the Quartermaster-General's Department throughout the campaign, their proceedings will be found recorded in the fortnightly Reports submitted by Captain Holland, Assistant-Quartermaster-General, to the Quartermaster-General, Horse Guards, and noted in the preceding chapters.*

The following were the working rules of the field telegraph in Abyssinia :—

Working rules of field telegraph.

Messages were divided into two classes :—1st. Special precedence messages emanating from the Commander-in-Chief, through his personal staff or heads of departments with him, from Generals of Divisions, Brigadiers, Officers Commanding columns or posts. The prefix for these was S.P. When a message bearing this prefix was offered, all other work ceased and remained suspended until the S.P. message was transmitted. In the case of two S.P. messages, they were sent according to priority; and 2nd, P.D. ordinary messages, which were transmitted according to priority.

For signal messages the station required was called by giving its code (the first three letters of its name), then the letter V, followed by the code or first three letters of the name of the station calling. The station called replying by giving its code, followed by the word 'Here.' The station calling then gave the prefix of its message, its date and time. If the station called had none of earlier date or time, it gave the signal 'Go on.' But if the station called had a message of prior claims, it sent it, and so on.

* See pages 5, 20, 73, and 108.

Each message was signalled in the following manner:—Prefix - - - - - -; No. of message - - - - - -; No. of words - - - - - -; Date, hour, and minute tendered for transmission - - - - - -; Name and address of sender - - - - - -; Name and address of receiver - - - - - -; Body of message - - - - - -.

Immediately a message was finished, the person who received it counted the number of words it contained, and compared it with the number signalled. If they did not agree, he said the number he had, and the sending station repeated the first letter of each word until the error was corrected. If the message was right, the signaller who had received it telegraphed back its number, name of its receiver, and any doubtful or difficult word, followed by the signal "Understand." All messages were registered in the record book."

Officers authorised to sign telegrams.

No messages were received for transmission unless signed or countersigned by the Officer Commanding a division or station, or by an officer of the Quartermaster-General's Department, the Controller of Supply and Transport, the Deputy Commissary-General, the Commanding Engineer, or the Military Secretary to the Commander-in-Chief.

Telegraph offices at Zula and Senafe were open day and night; other stations were open from 6 to 7 A.M., and from 10 A.M. to 6 P.M., unless messages were marked emergent, when they were received at any hour.

The telegraph line was, as stated, completed to Antalo on the 2nd April, 1868. By the time the report of its progress so far reached head-quarters, the Force was so near Magdala that it was deemed unadvisable to carry it further; and the whole energy of the Telegraphic Department was devoted to keeping the line between Zula and Magdala in good working order.

Disposal of telegraph stores.

In regard to the disposal of the telegraph stores, the telegraph wire (copper), the homogeneous iron wire, 50 miles of covered wire (Hooper's core), and the whole of the instruments, batteries, and small stores, were sent to Bombay, where they could be utilized in the Indian and Anglo-Indian Offices. The army signal apparatus was returned to England, to be re-transferred to the War Department.

The following Report by Lieutenant O. St. John, R.E., was made on the telegraphic material used:—

Lieutenant St. John's Report on the telegraph arrangements.

"To illustrate more clearly the points in which the material and apparatus were "successful or deficient, I will first give a brief description of the telegraph, as erected "along the road from Annesley Bay to Antalo, a distance of about 200 miles.

"This line presented three well marked divisions: first, the belt of low land, 12 miles "in breadth, between the sea and the hills; secondly, the tortuous defile, 50 miles long, "leading to the highlands; and, lastly, the great plateau of Abyssinia. Of these, the "second alone presented any extraordinary natural difficulties. From Annesley Bay to "Kumayli, at the entrance of the Pass, the line was carried along the proposed course of "the railway, for the first six miles on teak supports 20 feet in length, and afterwards on "mimosa poles cut from the surrounding jungle, averaging not more than 12 feet. These "were subsequently replaced by teak posts. From Kumayli to the end of the Pass, the "line was necessarily carried close to the road, except where the spurs of the hills on "opposite sides were close enough for the wire to be thrown in long spans from one to "another. It was generally supported on mimosa posts, varying in different parts from 10 "to 20 feet. Cut from the jungle as the line progressed, they were of course green, and,

General description of the line.

" though sufficiently stout, warped excessively in drying. In a few places insulators were " fixed to trees, and sometimes, as in the Suru Pass, to the face of the cliff. By the time " the telegraph was completed to Senafe, the first station in the highlands, the bamboo " supports ordered from Bombay had reached Zula, but such was the scarcity of carriage " that none could be spared to bring them up to the front. Subsequently, I had about 700 " brought up by native carriage for use in parts of the country where no timber of any " sort was obtainable. For the remainder of the line from Senafe to Antalo, a distance of " 130 miles, I was dependent on supports cut or purchased in the country. These were " generally saplings of the juniper pine, from 10 to 15 feet in length, rarely exceeding " three inches diameter at the base, and one at the top, and elastic as a fishing-rod. They " were brought by the natives from considerable distances, and sold at prices varying from " one to ten for a dollar. No insulators were used on this part of the line, the wire being " simply passed through a notch in the top of the intermediate poles, and secured by three " or four turns round the stretchers. Where the poles were exceptionally slight a tripod " of three was formed to give stiffness enough to stretch to. The supports obtained in the " country were placed from 40 to 60 yards apart, the bamboos from 80 to 100. On the " latter the wire was generally inserted in a nick cut with a saw in the side of the bamboo, " about a foot from the top. Stays or struts were seldom used, being unnecessary, except " at very sharp angles, from the lightness of the wire.

" It is evident that a line so slenderly constructed would be more than ordinarily " exposed to damage; except at road crossings, the wire was rarely high enough to allow " a loaded camel to pass below it, and was almost everywhere within reach of a mounted " man.

Interruptions. " Interruptions were thus very frequent, and the most constant vigilance and labour " were necessary to keep open communication. The most fertile source of damage was " undoubtedly the thieving propensities of the natives, which threats and remonstrances to " the Chiefs proved of little avail to check. Next to this were the interruptions caused by " our own baggage animals, which, when relieved of their loads, rubbed themselves against " the poles, and often tore down furlongs of line in the vicinity of the halting-places.

Railway line. " Besides the main line of telegraph from Zula to Antalo, a line, 10 miles in " length, was erected for the use of the railway, and a supplementary wire was stretched " through the pass between Kumayli and Undul, a distance of 25 miles.

" The foregoing brief description will illustrate the following detail of the merits " and defects of the various items of material and apparatus.

Copper wire. " For the main line, 350 miles of No. 16 W. G. copper wire were supplied by " Messrs. Bolton and Sons, of Manchester. It was wound on wooden drums, in lengths of " from 1 mile 1,000 yards to 1 mile 700 yards, the average length being 2,700 yards, and " weight, including drum, 120 lbs.

" The main line from Zula to Antalo, and also the railway line, were entirely con- " structed with this wire. For 60 miles from the coast only, insulators were used, but " nothing could have been better than the working over the remaining 140 miles, where " not only was there no insulation, but where the poles were mostly green. Even in heavy " rain, no difficulty was found in working. Spans of 400 yards or more were stretched in " many places, and stood perfectly well. For facility of stretching and jointing, conduc- " tivity and portability, nothing could have been more satisfactory than this wire. An " iron wire of even half the electrical advantage of the 16-copper wire would have been " three times the weight, and, apart from the larger amount of carriage it would have " required, could not have been supported on poles of such tennity as those necessarily " used. Inspectors on repairing duty, again, were able to carry with them several hundred

" yards of wire to replace possible thefts by natives; with heavier iron wire this, of course, " could not have been done.

" Altogether, the selection of this copper wire was most fortunate, but it is not without " its defects. First of these is, its liability to stretch during the operation of straining. " No great force is necessary to decrease the sectional area of the weakest part of the wire " by one-half, with a corresponding diminution of strength and conductivity. This defect " can only, of course, be obviated by constant care, and by straining in short lengths.

" The second demerit of copper wire is similar, but less obvious. I was puzzled for " some time to account for the way in which many stretches of wire, originally strained " with a dip of a couple of feet between each pair of poles, gradually increased this dip, " while, perhaps, stretches close by and under similar conditions remained *in statu quo*. " After some time, I found that, as long as the poles were left untouched, and exposed " only to the force of the wind, the wire on them remains unhurt; but if the posts were " shaken violently, by cattle rubbing against them or other such cause, the vibration com- " municated to the wire tended to elongate it, till it hung in festoons, several feet below " the original position. This peculiarity necessitated frequent re-stretching in places where " the supports were weak and exposed.

" In the plain near Zula approach to the poles was successfully prevented by piling " brushwood round their bases.

" Wherever the wire was carefully paid out from the drum, so as to prevent any " kinking, I do not believe that there was a single accidental break, except possibly at a " maker's joint, which are always weaker, I imagine, from over-heating whilst soldering, " than joints made in the field.

" The joint used was the ordinary German or twisted joint; eight or ten turns being Joint. " taken on each side. The ends were occasionally brought over, and twisted together, to " prevent the possibility of the joint drawing out. No solder was used. The wire was " stretched by hand, on the ground wherever sufficiently level. Hedger's gloves were worn " by the men stretching, as the thin wire often cut through the skin and caused painful " sores. Where insulators were used, the wire was bound at every one. Much trouble " arose from the insufficient strength of the drums on which the copper wire was wound to " stand the terrible wear and tear of mule carriage. The great heat shrunk the wood, and " loosened the screws binding the heads of the drum to the spindle. Careless muleteers " will not take the trouble to lift loads from their mules, but let them fall on the ground. " The drum-heads thus constantly came off, and the wire became kinked and entangled, " causing much trouble and delay in paying out. The drums on which the Hooper's core " and homogeneous wire were wound suffered less, but were not altogether satisfactory. " Cart carriage being unobtainable, drums for wire or core might, I think, be made of " wrought-iron, without being much heavier, although, of course, more expensive than " those of wood. If time, expense, or other reasons, prevent the use of wrought iron, a " spindle of that metal should be supplied with each drum. This, by means of a screw and " nut at one end, would bind the drum firmly together, and the two projecting extremities " would be useful in packing the wire on the mule saddles.

" Fifty miles of No. 15 galvanized homogeneous iron wire was supplied for use on Homo- " short lines near the coast, should such be required. From trials made in London on geneous iron " samples of this wire, it appeared far tougher and stronger, in fact more adapted in every wire. " way but conductivity, for telegraphic purposes than the copper wire. In actual use, " however, it proved far inferior. It was stretched only for the second line through the " pass from Kumayli to Undul, a distance of 25 miles, and proved unequal in quality, " difficult to stretch, even in short spans of 80 to 100 yards, and often was so brittle as to

" preclude the use of the German joint. I believe that this unsatisfactory result arose " from over galvanization. Where the tin coating was smooth and even, the wire was " fairly tough and difficult to break by kinking, but in many places, where the galvanizing " was unequal and ridged, a second twist was hardly necessary to snap it.

Insulators. " In reporting on the material required for a field telegraph in Abyssinia, Major " Champain recommended that a small proportion of insulators should be supplied for use " in forest country, and to provide for the possible necessity of carrying the line through " swampy regions. Under ordinary circumstances, a copper wire on bamboo supports " would not require insulation. Two thousand bracket, and the same number of spike, " insulators were accordingly obtained from Messrs. Siemens. These insulators were used " only on the teak and mimosa supports between Zula and Senafé. Except for securing " the wire to trees and rocks, they were of no great utility, and sometimes worse than " useless, as the rough edge of the galvanized covering often cut the soft copper wire. " This was particularly the case with the spike insulators, which, though intended for " trees, proved useful only for rocks, the bracket insulator being better adapted for the " former.

" At first the wire was secured to every fourth insulator only, but it was afterwards " found necessary to secure it to every one. The notch in the top of the insulator is thus " useless.

" For a single light copper wire, such as that used in Abyssinia, insulators are quite " unnecessary, except for carrying the line through forest or along the face of a cliff, the " latter being a necessity which would rarely arise. For forests the bracket form is " undoubtedly superior to the hook and spike. The trees selected as supports are of course " rarely, if ever, in a straight line, and thus the hook is pulled either inwards or outwards, " so that the wire has not free play through it, and any advantage of a hook is lost. For " tree work, therefore, I do not think that anything could be better adapted than the " bracket insulator supplied for Abyssinia, substituting only a solid for the cleft head of " that pattern. The method of fixing to the supports by means of straps answered " admirably, but 50 per cent. extra nails, and 20 per cent. straps, should be supplied, the " waste of both being considerable. For fastening wire to rocks, the spike insulator " answered fairly, but the spikes were too short and of too soft iron. Steel spikes, two " feet long, would have been of the greatest service. Wherever a shrub could be found " growing out of the rock, the wire was attached to it instead of to an insulator, insulation " being obtained by binding one or more folds of sheet india-rubber round the stem.

" The method in which the insulators were packed was admirable. One hundred, " with straps and nails, or spikes complete, were held in a stout wooden box, two of which " formed a mule load. Each contained a complete set of tools and materials for fixing the " insulators and stretching the wire, consisting of hammers, gimlets, files, cutting pliers, " scissors, fine wire, twine, and emery paper, besides a couple of pieces of sheet india-rubber. " Of these, however, the wire and files were not used. The empty boxes proved most " useful for containing small stores, records, &c.

Hooper's core. " Fifty miles of Hooper's core were supplied for flying lines, to be laid upon the " ground for communication in action or with outposts. This core consisted of a copper " conductor of three strands, tinned over, and covered with several coats of india-rubber, " prepared according to Hooper's patent. It was wound on wooden drums, in lengths of " 700 to 880 yards, each weighing from 110 to 140 lbs. To have carried a portion only " of this material, with its equipment complete, would have necessitated a train of at " least 100 mules, a number which could not have been spared from the more urgent " requirements of the Ordnance and Commissariat.

"The greater part of the Hooper's core was left, therefore, at Zula, the instruments "intended for the flying lines being, moreover, required for the intermediate offices on "the main line, which were required in far greater numbers than had been foreseen. A "few drums of core had, however, been sent up to Senafe when first landed, and with these "a line of about two miles was laid to the head of the Pass. As far as insulation went it "answered perfectly, but lying, as it did, day after day, along the high road, it proved an "irresistible temptation to the natives, who managed to steal many yards daily without "detection. It was, therefore, replaced as soon as practicable by an aëriel line.

"I have thus hardly had a fair opportunity of judging of the Hooper's core as a "material for flying lines. All I can say is, that neither the heat nor damp of Zula "appeared to have in any way affected it. Its only fault seemed to be want of strength "in the conducting wire. Five strands of similar dimensions to those used would have "been preferable to three.

Paying out carriages.

"One pattern of carriage for paying out and picking up was used both for the large "drums of core and the smaller of iron and copper wire. Twelve were taken out, seven "or eight of which were used, and, with the exception of some of the minor fittings and "of the woodwork of the wheels, were as perfect at the end of the Expedition as when they "left England. They were made at Messrs. Siemens' factory at Charlton, under Major "Champain's superintendence, and answered the purpose for which they were intended "perfectly. A model was sent to the Royal Engineer Museum at Chatham. On these "carriages I can suggest no improvement, except that spare wheels and handles, in the "proportion of a pair of the former and three of the latter, should be sent with each "carriage.

Instruments and batteries.

"Three descriptions of signalling and receiving apparatus were sent to Abyssinia. "For the main or semi-permanent line, eight relay instruments (with writers) were "supplied by Messrs. Siemens. The same firm supplied twelve smaller recording "instruments for the flying lines on similar principles to the first, but without relays. "Four magnetic instruments, obtained from Messrs. Henley, were also taken out. The "last were only used on the short line of railway telegraph, where they did good work. "Of their suitability for transmission of signals through long lengths of wire I am thus "unable to speak, but they deserve a fuller trial, and their defect of non-recording is, I "think, almost, if not fully, compensated for by their requiring no batteries. For aërial "lines it might possibly be difficult to protect them from lightning, but for ground or "buried lines I believe that magnetic instruments would, with complete signallers, prove "preferable to all others.

"To return to the signalling apparatus used on the main line. The larger instru- "ment consists of a signalling key, ordinary relay and printing apparatus, and two "vertical galvanometers, without translative connexions. Owing to the inability of the "signallers sent from India to signal so as to print intelligibly, an inability caused by the "fact of non-recording instruments being used in India, the printing part of the "apparatus was not used in Abyssinia. Of the remainder, the relays, connections, keys, "and fittings generally were admirable, but the galvanometers were very defective. "Their resistance was so great that from the first it was found necessary to cut them "out of circuit for rapid working, and a very short time rendered them useless even as "detectors. The smaller instruments were similar in construction, but had no relays, "and simple horizontal galvanometers. These were infinitely better than the more "elaborate detectors attached to the larger instruments, and I was compelled sometimes "to detach them for use with the latter. Both, however, had the fatal defect of being "very liable to injury during transport.

"For all rough work, not only campaigning, but wherever instruments have to be "carried on pack-saddles, or even on carts, over rough ground, galvanometers should be "invariably detached, and several spare ones supplied. The experience of Abyssinia "only bears out what I had previously remarked in Persia, where the attached galvano- "meters gave constant trouble, and had often to be replaced by extemporized "indicators.

"As regards the working of the instruments, large and small, apart from the "galvanometers, nothing could have been more satisfactory. Even the small field "instrument, without relay, worked by a twelve-cell battery, sent and received satis- "factorily through 120 miles of insulated wire. Translating connections would, however, "have been most useful on the larger instrument.

Batteries. "The batteries used were all known as "Marie Davy's carbon and zinc," the acid "employed being protosulphate of mercury. They were obtained from the same makers "as the instruments. Each element consists of a carbon cell, covered with vulcanized "india-rubber. This contains the protosulphate of mercury, reduced to a paste with "water. In it is the zinc part, hollowed out to contain water, and prevented from touching "the carbon by small wooden plugs. These elements were in sets of twelve and twenty- "four for the lesser and greater instruments respectively, enclosed in teak boxes, the lids "of which held india-rubber washers, to prevent leakage when closed during carriage. "Each box held besides a syringe for charging with water and a tin of spare acid. For "the relays of the large instruments, sets of six elements on the same principle, but "square in shape and more powerful, were provided. All were sent out ready charged, but "while the small round elements were found in perfect order on unpacking, the relay "batteries were much deteriorated. Action to such an extent had set up in them that the "zinc was already half eaten away, and, in fact, after working a few weeks, they became "quite useless. The other batteries, though hardly coming up to the expectations formed "of them, either as regards lasting powers or convenience, did very well, and, electrically "speaking, left nothing to be desired. Their defects were, the necessity for recharging "with water two or three times a day; the great care and time this operation required, a "care which it was difficult to get signallers to take; and the rapid deterioration of the "copper straps, caused by leakage while travelling, and the unavoidable spilling of water "during recharging. It was supposed that the carbon parts would require renewal sooner "than the zinc, and spare parts of the former only were taken out, but the contrary proved "to be the case, as, towards the end of the campaign, many zincs had nearly corroded "away, while the carbon parts remained almost unimpaired. Fresh protosulphate of "mercury was required about every two months, more from wasting than from deteriora- "tion. Taking them altogether, I think they are the best batteries I have seen for field "purposes. Had the elements been a little larger, it would have been an improvement; "spare zincs and straps are also required, and the action of the acid on the pewter syringes "is such as to make it unadvisable to carry the latter in the box with the elements.

"A small chest, containing a box of repairing-tools for instruments, covered wire, "earth-plate, Morse paper, and ink, accompanied each instrument. The addition of "magnets only was wanted to make them complete.

Office stores. "For the offices on the main line, tents complete were ordered from India, but were "sent without floor-cloths, or furniture, so these had to be improvised. Latterly, I used "the tables and stools provided for the flying offices on the main line.

Stools and tables. "The stools were ordinary camp stools, of extra strong construction; the tables were "simple planks of mahogany, the legs screwing into battens underneath. Not one of "either was broken or needed repair, after six months' work and some hundred miles of "mule carriage.

"Six india-rubber water-bags were taken out to carry water for the earth-wires of "temporary offices. Although not much used for this purpose, they were most useful in "taking out water to working parties. I was astonished at the amount of rough usage "these bags stood without injury, even the terrible mimosa thorns seemed unable to "damage them. India-rubber water-bags.

"The globe lamps for burning oil were strong and useful, but a candle lamp would "have been preferable. Globe lamps.

"Strong silver watches would also have been better than the portable clocks pro- "vided. Clocks.

"The small bivouac tents for the temporary offices on the flying lines were hardly "used, but seemed well adapted for the purpose for which they were intended. Tents.

"Crowbars were principally used for digging holes for supports. Twenty-four were "taken out, but proved insufficient, and I had to obtain others from the Engineer park. "A portable forge for repairing these and other tools, and grindstones for sharpening "axes, were often much required. The ten American axes provided were invaluable, "but insufficient in number. Of bill-hooks I had fifty, and most useful they were. The "remainder of the line stores do not call for much remark, except the india-rubber "boat, which, though never required for telegraphic purposes, the line of country traversed "crossing no river, proved useful in surveying and sounding Lake Ashangi. Line stores.

"The stationery supplied only lasted out the campaign with great economy, with "the exception of record books and message forms, of which ample remained. All was "admirable in quality. Stationery.

"Early in January, when the difficulties of keeping open the first section of the line "from Zula to Suru appeared insurmountable, owing to the damage done by the "numbers of sick camels grazing in the jungles, his Excellency the Commander-in-Chief, "at my reccommendation, telegraphed to England for 200 iron standards, with twenty "miles of iron wire and stores complete. By the time they arrived the final march "from Antalo on Magdāla had commenced, and it was more than probable that the "campaign would be brought to a speedy close. Moreover, the measures taken to guard "and improve the line had had such effect, that no interruption had taken place on the "section in question for nearly a month. Again, all available labour was required for "other purposes, and I therefore did not disembark the stores in question, which were "sent on to Bombay. I am therefore unable to report on them. Stores for twenty miles of line on iron standards.

"No letter informing me of the despatch of the lime light apparatus reached me, and "I only accidentally discovered its arrival, and then too late to get it up to the front in "time for the operations before Magdāla, where it might have been useful. On the "return march, however, during a short halt at Senafe, I experimented with it, but from "a defect in the apparatus, which there was not time to remedy, was unable to make "sufficient hydrogen gas for a satisfactory trial. The system of obtaining this, viz., by "passing steam through red hot iron filings, differed from that I had formerly seen (by "acid), and, in spite of the difficulty of carrying acid, is, I think, inferior to that method "for use on a campaign. Lime light apparatus.

"The only other stores which were at any time under my charge were the photo- "graphic and army signal stores. The former I, by direction of Major-General Sir "Charles Staveley, then commanding in Abyssinia, gave over to Major Pritchard, R.E., "a few days after landing. Photographic stores.

"Within a fortnight of arriving at Zula, I sent Lieutenant Morgan, R.E., who had "charge of the signalling party to Senafe, then the advanced post. My own more urgent "duties in connexion with the telegraph did not permit me to join the head-quarters of the Signallers.

" Army, with which the signalling party remained throughout the advance on Magdâla, " where they did good service, and I am, therefore, unable to say regarding the stores. " Lieutenant Morgan's melancholy death on the return march, from fatigue and exposure, " deprives us of the interesting fruits of his experience; but the non-commissioned officers " of the signal party, which has returned to Chatham, where the apparatus was prepared, " will, I have no doubt, have much valuable information to communicate. I will only " remark, that the apparatus for signalling between ship and shore was not found neces- " sary, owing to the short distance separating the anchorage from the beach.

Bamboos. " Owing to the uncertainty as to whether timber for supports would be found in the " country, Major Champain recommended that 10,000 bamboos should be supplied from " India. I have already explained why so little use was made of these.

Teak poles. " Teak poles of very good quality were substituted for a part of the bamboos, and " most of the remainder were cut in half and jointed in Bombay to facilitate transport on " pack animals: These jointed bamboos were a failure. The few that were taken up " country were carried by natives at a higher rate than those left entire, and the difficulty " of fitting the tops and bottoms together was great. As simple supports they answered " passably, but it was impossible to stretch on them. Had camel or mule carriage been " available the jointed bamboos would doubtless have been easier of transport than those " left whole; other advantage they had none. Almost all were of excellent quality.

Disposal of materials at the close of the campaign. " From Antalo to the Egypto-Abyssinian frontier, a distance of 140 miles, the wire " was taken down and brought to the coast, the telegraph office at each halting-place " remaining open till the night before the march of the rear-guard. From the head of " the Senafè Pass to Zula the wire had been secured to each insulator, and, therefore, " from the great rapidity of the march down, I was unable to bring away the line in " the Pass.

" At my recommendation his Excellency the Commander-in-Chief directed that the " army signal and lime-light stores should be returned to England, and the telegraphic " material sent to Bombay, with the exception of the 20 miles permanent line, which " was required for use at Aden. But this had not been discharged from the ship which " brought it, and as there was a large quantity of other material lying over it in the " hold which would have taken much valuable time to remove, I acquiesced in the " proposal of the Senior Commissariat Officer, that it should be sent to Bombay. At " this time also there was no means of sending the lime-light apparatus to England, " except *vid* Suez, and I, therefore, requested that it might be taken to Bombay for " transhipment. The signalling stores, which had been provided for by the War Depart- " ment, remained in charge of the 10th Company Royal Engineers, and were brought " by them to England with their regimental baggage.

" The telegraphic material was handed over to the Commissariat for shipment, and I " directed Mr. F. Hervey, one of the Assistants sent me from India, to take charge of " duplicate packing lists for communication to the authorities at Bombay.

Remarks on military telegraphy. " I now beg leave to submit a few remarks on the subject of telegraphs in warfare, " suggested by the experience I have had the opportunity of gaining in Abyssinia.

" A British army may possibly be again called upon to wage war in a barbarous " country, at a distance from its base of operations. To an officer called upon to superin- " tend telegraphic communication on such an Expedition, I believe that the record of my " experience would be of much use; and even to a campaign in more civilized lands, " wholly or partially provided with a system of telegraphs, many of my remarks will be " applicable.

" The subject naturally divides itself into two sections, construction and organization.

Construction of a military telegraph.

" It may, I think, be taken as an axiom, that to supply the telegraph wants of an army " advancing on a line of communication more than 100 miles in length (*i.e.*, that distance " separating the advance column from the base), a double wire is absolutely necessary; for " more than 200 miles a third wire, and so on. For an Army wholly dependent on its base " for supplies, as was the Army in Abyssinia, I would add a second wire after the first " 50 miles. One wire would be set aside for through traffic between base and head- " quarters, with translating stations at the principal depôts; the other wire or wires " would serve as means of communication between the minor stations, one of which " should be at each halting-place. A reference to the following Table of the traffic on " the telegraph in Abyssinia will show the difficulty of carrying on the work of an " Army with a single wire, and the large share of traffic contributed by the minor halting- " places.

" It may be here mentioned that messages were rarely sent to the officers for trans- " mission but between 10 A.M. and 10 P.M. I began by keeping the principal offices open " at night, but soon found the uselessness of so doing, except when important messages " for England were expected from the front.

Work performed by field telegraph

" The last month only (May) gives an adequate idea of the work which would have " devolved on the telegraph, had circumstances permitted its advance with the head- " quarters.

From.	January.	February.	March.	April.	May.	Total.
Zula	166	333	399	324	518	1,739
Kumayli	175	309	302	200	446	1,432
Saru	..	108	187	119	240	654
Undul	..	127	218	134	327	806
Rahagedi	..	96	200	137	418	846
Senafé	..	146	370	250	507	1,273
Feenda	..	..	..	16	52	68
Adigrat	..	..	245	175	171	591
Adabaga	No records kept.					
Dolo						
Head-quarters	..	..	18	170	251	439
Totals	340	1,119	1,939	1,525	2,925	7,848

" Any one conversant with the details of traffic on a line of telegraph will see that a " single wire, much subject to interruptions, would be quite inadequate to the transmission " of so large a number of messages, averaging nearly 40 words each, exclusive of addresses " and official instructions. The number would have been much larger, had not restric- " tions been placed on the power of officers to use the telegraph. This was at first " practically unlimited, but the privilege of signing messages for transmission was " afterwards restricted to Commanding Officers and Officers of the Quartermaster- " General's Department. This limitation produced a marked diminution in the traffic " (*vide* Return, months March and April).

Description of line Preferred.

" The next question for discussion is the description of line to be erected. This " must, of course, vary to a certain extent with circumstances, but the line, if likely to " be required for more than a few days, should be as strong as if intended to be " permanent.

"A telegraph on a line of communications is subject to more chances of injury than "one through a similar country unoccupied by a military force. Camp followers are more "mischievous and careless than ordinary travellers, and, apart from any hostile demon- "strations, all the worst classes of natives may be expected to hang about the march of "an Army. The constant passage of troops does little to protect the telegraph, which "should thus be constructed to stand as much rough usage as possible. Economy of "carriage, if not of money, would, as a rule, prevent the use of iron standards and heavy "wire, but, except under the circumstances of total absence of wheel carriage, lighter "material than No. 12 iron wire, on strong bell insulators, should not be used. For two "or three wires, I would not place the poles further apart than 70 yards, or 25 to the mile, "with ordinary 18-foot poles. If the base of operations be on the sea coast, iron "standards might be used with advantage for the first 50 or 100 miles.

Best position.

"About 20 to 50 yards from the road is the best distance for the line. Road "crossings should be of course avoided as much as possible, and struts used instead of "wire stays. If the march of the Army to the front be so rapid as to prevent the "erection of a substantial line to accompany it, a single flying line without insulators "might be erected at the rate of 10 miles a-day. A second working party, working at

Rate at which a flying line could be erected.

"half that rate, would follow, insulating the first, putting up a second wire, and generally "finishing the line.

"When the telegraph material was prepared for Abyssinia our knowledge of the "country to be passed through was insufficient, and all that could be done was to take "out material adapted, as far as possible, to any circumstances; and for the erection of a "line from Senafè onwards over the table land of Abyssinia, nothing could have been "more suitable than the copper wire and bamboos supplied. But for communication "between Senafè and the sea, I would have provided a double line of 60 miles, supported "on iron standards. Operations should have commenced at both places, from Senafè with "the light line to accompany the march of the Army, and from Zula with the permanent "line to connect Senafè, the base of operations in the highlands, with the sea.

Working parties.

"Working parties must, of course, vary with the nature of the troops employed and "the country. A company of native troops, properly supervised, can put up five miles "a-day of line over ordinary ground. To accompany the march of an army two com- "panies working independently would be required.

Organization of a military telegraph.

"With regard to the organization of a military telegraph, the first question that "suggests itself is, under what Department of the Army should the telegraph be placed?

"It may be expected that the *personnel*, at all events of the higher ranks of the "telegraph, will, as a rule, be furnished by the Royal Engineers, and the control of their "operations would thus naturally fall to the Commanding Engineer. But the construction "and maintenance of the lines are only the engineering part of the duties of a telegraph

Department under whose control a field telegraph should be placed.

"officer. The direction of lines, the organization and control of officers and traffic, are "equally important, and have been more in connection with the Quartermaster-General's "or Intelligence, than the Engineer Department. In Abyssinia, the control of the con- "struction of the line was subordinated to the latter, but its direction, management, and "traffic to the Quartermaster-General. This arrangement, though no inconvenience arose "from it in Abyssinia, would not, I think, work well in operations on a more extended "scale.

"It is now, I believe, proposed to place the control of the system of telegraphs in "England under the Post-Office, or rather to unite the Telegraph Department to be "created with the Postal. This system is, I venture to suggest, admirably calculated to "promote the efficiency of both telegraphic and postal arrangements on a campaign.

"The advantages of such an arrangement are many. In small stations, the "necessity for double staff would be obviated; the postal duties, ordinarily entrusted to "some officer who seldom willingly undertakes them, and is liable to be removed at any "time, could be easily and efficiently discharged by a telegraph clerk, accustomed to the "ordinary business routine of a telegraph office. In larger camps, the civilian post- "master would better perform his work, under the supervision of the commissioned tele- "graph officer, who would supplement and arrange much of his traffic through the post "during interruption, and would inspect both Departments on his tours. Finally, both "should be represented at head-quarters by a single chief, as director of communications, "who should receive orders through the chief of the Staff.

"The flying telegraph for use in action, and the Army Signal Department, should be "entirely separate, and subordinate to the Quartermaster-General's Department. Flying telegraph.

"The staff for an army telegraph I would, therefore, organize as follows:—

"A Director to remain at head-quarters, having control of postal arrangements, in "addition to his telegraphic duties. Two, three, or four assistants, according to the "length of line likely to be erected, in the proportion of one to every 100 miles. They "should be military officers, if possible. The disadvantages of employing on a campaign "civilians in positions necessitating constant official communication with officers of all "ranks and departments are great and obvious, and I would prefer as an assistant a hard- "riding Subaltern of Engineers, though previously unacquainted with telegraph work, to "a civilian, however well acquainted with his duties. It would, however, be desirable to "have a civilian traffic-manager at the base of operations, or with the head-quarters. Staff recommended.

"For the subordinate staff, if soldiers thoroughly qualified in the duties of telegraph "clerks could be found they would be preferable to civilians, but the training in the tele- "graph school at Chatham, though an admirable groundwork, does not qualify men for "more than the manipulation and management of instruments. With the exception of "two or three, who had been employed as telegraph clerks before enlistment, none of the "forty or more men of the Royal Engineers who have served under me in telegraph duty "during the last four years were fit for the charge of offices on leaving Chatham, "although a few months' experience thoroughly qualified most of them for independent "charges. Better material could not be had, practice only was wanting, and this they "have no opportunity of obtaining. If it should be desired to have a thoroughly trained "body of military telegraphers, fit to take charge of and work lines in a foreign country "at a day's notice, some one or more of the public lines in England should be entirely "managed and worked by the Royal Engineers. This would give a trained staff, which "could be transferred, complete in organization and material, to a seat of war. Failing "such, I should prefer civilian clerks, entrusting the conservancy of the line to trained "Sappers. These should be mounted, and armed with a sword in a frog belt, and a "revolver carried at the waist. The regulation equipment of the telegraphers of the "Royal Engineers in Abyssinia was a source of constant annoyance to the men, and of "delay in the service. Even during construction the heavy rifle and ammunition was "much in the way, and on interruption and inspection duty was so irksome that the rifles "were sometimes left behind, though against orders, and the men went out unarmed. "This resulted in a corporal receiving three severe wounds, and losing his mules and "baggage, on being attacked by natives. Subordinate staff.

"A man cannot comfortably carry his rifle and ammunition when mounted; and "to send men on foot to inspect and repair a long section of line is to expect impossi- "bilities.

Lieutenant St. John's recommendation for establishments.

"In conclusion, I beg to submit a list of the total establishment I should think "necessary for the construction and maintenance of a line of military telegraph, 200 miles "in length, half of which a double line, with two terminal, three intermediate translating, "and 12 minor and observation stations.

"GENERAL STAFF.

"1 Director.
"2 Military Assistants, one at head-quarters, and one at the central station.
"1 Civilian Assistant, as Traffic Manager.

	Head Clerks in charge of large Offices.	Signallers.	Principal Inspectors. (Sergeants, R.E.)	Line Inspectors.	Instruments, translating.	Instruments, ordinary.
2 terminal stations ..	2	8	2	4	2	2
3 intermediate ditto..	3	12	3	6	6	6
12 minor ditto ..	..	12	..	12	..	12
	5	32	5	22	8	20

"An equal number of spare instruments should be provided with commutators and "lightning dischargers for all stations.

"The stores for each station, including stationery, should be packed separately."

CHAPTER XXIII.

POSTAL ARRANGEMENTS.

Sea postal arrangements.

ARRANGEMENTS were made for the postal communication between Abyssinia and England and Bombay by the Commodore commanding the East Indian Station at Bombay. It was at first arranged that despatch-steamers from Annesley Bay should intercept the mail-steamers of the Peninsular and Oriental Company off the island of Jebel Tir, in the Red Sea, the despatch-steamer hoisting her ensign at the main by day, or exhibiting three vertical lights at night, and burning a blue light at intervals of 20 or 30 minutes to signal the packet. This arrangement was carried out for some time, but it was found that the despatch-steamers often missed the mails, and sometimes, in consequence of bad weather, could not put their bags on board the mail-steamers, or receive those made up in London or Bombay for the Force. The bags were ordered, if not intercepted, to be taken on, and deposited at Aden, whence they were brought back by the returning mail-steamer to Jebel Tir.

Jebel Tir.

Arrangements for steamers direct to Suez and Bombay.

It was found that this arrangement did not answer, and accordingly, in the beginning of February, arrangements were made to run the mails direct from Annesley Bay on the one hand to Suez, on the other to Bombay.

As every vessel brought cargo, no special expense was incurred; indeed that of the Jebel Tir steamers was saved.

Dates of departure of mails.

Mails were sent from Zula every Saturday for Suez, and on every Tuesday for Bombay.

Arrangements were also made for mails to leave Egypt every Sunday for Zula.

A steamer was despatched after the beginning of December, from Bombay, on the 3rd and 19th of each month, to Annesley Bay, calling at Aden to meet the homeward mail from Calcutta. These steamers returned from Annesley Bay to Bombay on the 23rd and 8th of the month, meeting the outward mail for Calcutta at Aden.

It was proposed by the Director of Transport Services to reduce the rate of postage to men of the Army and Navy employed with the Force. This was, however, refused by the Postmaster-General in the following letter to the Treasury, dated the 29th January, 1868:—

Proposal to reduce rate of postage negatived.

"I return herewith the letter from the India Office, which was referred to me by "your Lordships on the 22nd instant, relative to a suggestion which has been made by "the Director of Transport Services, for allowing the transmission, at reduced rates of

"postage, of letters to and from officers and men of the Army and Navy employed in "connection with the Abyssinian Expedition, as was done during the Crimean War.

"In making this suggestion, the Director of Transport Services can hardly have "been aware of the fact that the men of both Services already enjoy the privilege of "sending and receiving letters at a reduced charge of 1*d.* when sent under the usual "regulation, and that the charge on officer's letters is only 6*d.* per half-ounce.

"During the Crimean War, letters addressed, as well to officers as to soldiers and "seamen, were subject to a reduced charge of 3*d.* per quarter-ounce, and 6*d.* per half-ounce, "so that in effect, as most letters exceed a quarter of an ounce in weight, the present "arrangements in regard to postage give to the officers engaged in the Abyssinian Expe- "dition privileges as great as, and to the soldiers and seamen privileges greater, than "those enjoyed during the Crimean War; and I presume that your Lordships will not be "disposed to grant any reduction of postage beyond that afforded by the existing "regulations."

Fine on unpaid letters remitted.

All underpaid and registered letters were sent direct to the Postmaster at Zula; and postage stamps not being procurable in Abyssinia, the fine on unpaid letters was remitted, but the attention of the authorities at Bombay was called to supply stamps.

Money-order system not required.

It was considered unnecessary to establish the money-order system between England and the Army Post Office in Abyssinia, as commissioned and non-commissioned officers and soldiers were allowed to make, through the India Office, remittances to their families in England.

The Army Postal Establishment was arranged in the following manner:—

A Post Office establishment of the following strength was attached to the Force, and an officer of the Quartermaster-General's Department was nominated ex-officio Post-master-General, to whom the Postmaster, appointed by the Bombay Government, was to apply, and whose orders he was to receive, in cases of difficulty or necessity.

Organization and establishment of post office.

The Postmaster was considered as, and received the privileges of, a commissioned officer in respect of messing, tentage, transport arrangements, &c. The remaining five Post Office clerks were considered and entitled to the privileges of warrant officers:—

	Salary, Rs. per mensem	
One Postmaster (civilian)	420	"
Two clerks, Rs. 100 each (ditto)	208	"
Three clerks, Rs. 75 each (ditto)	225	"
Six peons on Rs. 20 each	120	"
Contingencies	20	"
Total	Rs. 990	"

On arrival in Abyssinia, the Postal Establishment was placed under the general control of the Quartermaster-General's Department, and consequently reference to its working throughout the campaign will be found in the preceding chapters in the fort-nightly Reports sent to the Horse Guards by Captain Holland, Assistant-Quartermaster-General.*

* See pages 5, 8, 20, 73, 89 and 109.

Main post-office.

The main post-office was established near the pier at Zula, in a temporary hut. On the entrance of the mail-steamer into Annesley Bay, a gun was fired from the flag-ship, and the red or blue ensign hoisted at the main, according as the mail came from England or India. The same signal was hoisted at a flagstaff in the naval yard adjoining the post-office, and orderlies were immediately despatched from the different quarters of the Camp to the post-office to receive regimental and departmental letters. Till the arrival of the vanguard at Senafé, the inland post was regularly carried by two mounted troopers of the 3rd Bombay Cavalry, who were relieved at each station in the Pass. A postal detachment of 1 havildar and 12 men was placed at each station.

General inland postal arrangements.

On the occupation of Senafé, an attempt was made to carry the packets by paid Shoho runners. It was soon found, however, that instead of delivering they often destroyed the letters.

On the 16th January orders were issued that the packets in future should be carried by troopers of the 3rd Light Cavalry, whose horses had died or were sick, and who were mounted for the duty on mules of the Land Transport Train especially selected for the service. This arrangement was carried on between Senafé and Zula until the remounts for the 3rd Cavalry arrived. Afterwards, to the conclusion of the campaign, the post between Senafé and Zula was carried between each station in the Pass by two troopers of the 10th Bengal Cavalry, and detachments of this regiment were placed at each station for this duty.

As the army advanced parties of a non-commissioned officer and 12 troopers of one of the Native Cavalry regiments were left at each station on the line of communication, for postal duties. There were 32 stations between Magdála and the railway terminus, so that this duty required a considerable number of men; in fact, almost the complete strength of a regiment of Cavalry. The distance between stations averaged from ten to fifteen miles. The 10th Bengal Cavalry carried post packets from Zula to Adigrat, the 12th Bengal Cavalry from Adigrat to Ashangi, and the 3rd Bombay Cavalry from Ashangi to the front. All the available riding ponies of the Transport Train were distributed along the postal stations for the purpose of carrying bags heavier than the letter bags, containing newspapers and parcels. The troopers travelled day and night while carrying the letters, but were often delayed by convoys or troops moving along the road or footpaths across the hills, which were so narrow that it was often impossible or dangerous for two animals to pass each other. The post took about eleven days in transit from the sea-coast to Magdála.

On the return of the force the different postal detachments were picked up, and joined their respective regiments.

Inland postage.

Arrangements having thus been made for the carrying of letters entirely by enlisted men, orders were issued on the 4th March that no inland postage should be charged.

Post Offices.

Post-offices were established at Zula, Kumayli, Senafé, Adigrat, Antalo, at the Head-Quarters of the Force, and of each Brigade when on the move. The Postmaster sent from Bombay was left at Zula with the greater portion of his establishment; one of his assistants was attached to Army Head-Quarters as Postmaster, but was afterwards removed, and an officer placed in charge. At the station post-offices, with the exception of Antalo, the duties of Postmaster were performed by officers, and it was found in the Postal Department, as in every other department of the Force, that the civil element was replaced with great advantage by the military, for when an Army is in the field a civilian has little control over his subordinates, who cannot be punished except in very grave cases, and are inclined to become insubordinate and troublesome.

A Cavalry officer inspected every postal station once in every ten days. No one was allowed, under any pretence whatever, to stop the orderlies, or to open the bags. Separate packets of letters were made up for each station, and enclosed in *linen* or paper, and distinctly addressed to the officer in charge of the post-office at the station, who alone was allowed to open it. At each station troopers were kept ready, with their horses saddled, day and night, to carry on the bags immediately they arrived.

Recommendation that the postal department should be an organized military department.

"In future campaigns it would be of great advantage that the Postal Department "should be an *organized military department, managed by officers and non-commissioned* "officers. All men carrying posts should be armed, and should never travel singly, or "carry bags so heavy or bulky as to prevent the free use of their arms in case of attack. "In Abyssinia it was found that a letter-bag of 30 lb. weight was the maximum which a "trooper could conveniently carry. On two occasions the postal orderlies were attacked "by the natives, and their bags lost in the scuffle."*

* Report by Captain Holland, Assistant Quarter-Master-General.

CHAPTER XXIV.

COMMISSARIAT DEPARTMENT.

Establishment on embarkation.

THE Commissariat Department for the Force was organized at Bombay under Indian regulations, and was, on embarkation, composed of a Deputy Commissary-General, 5 Assistant Commissaries-General, 5 Deputy Assistant Commissaries-General, and 4 Sub-Assistant Commissaries-General, with a subordinate establishment according to Indian regulations. Seven of these officers were taken from the Bombay Commissariat Department, three from Bengal, and five from Madras.

This department with that of the Land Transport on starting from Bombay was placed under the direction of the Controller of Supply and Transport.

At the period the Expedition was organized the Commissariat establishment in India had been reduced to the lowest limit at which it was possible to carry on work in time of peace. The sudden pressure to collect and ship off the supplies required for 12,000 fighting men, 30,000 followers, and some 30,000 animals, compelled the Commissary-General at Bombay to weaken all Commissariat out-station offices to strengthen the Presidency office. Hence, with the exception of commissioned officers and some few of the warrant and non-commissioned grades, the Field Establishment had to be formed from new and untried materials, which necessarily added greatly to the labour and responsibility of the officers.

The first portion of the Establishment left Bombay with the Reconnoitring Party on the 16th of September, and landed at Zula on the 4th of October, 1867.

Major F. P. Mignon was the Commissariat Officer with this party, and a few days after landing (on the 9th October) he submitted the following Report connected with his department:—

Major Mignon's Report on the requirements, &c.

"First, as regards the requirement of troops on the seaboard.

"The place selected for the port of debarcation is opposite to and distant three miles "from the village of Zula, in Annesley Bay.

"*Port and Landing.*—The approach to the shore is not favourable, for about 400 "yards the water is very shallow; ships' boats even cannot approach within 150 yards, "for which distance it is necessary to wade. There is, however, good anchorage for "any number of vessels of any tonnage at about 700 yards from the beach, so that all "that is requisite to facilitate landing are piers, the erection of which is, I understand, "to be commenced at once.

"*Bullocks and Sheep.*—I learn from inquiry from M. Münzinger that large "numbers of cows and sheep for slaughter can be purchased in this neighbourhood at 7 "to 8 dollars for the former, and from ½ to 1½ dollars for the latter. The animals are "small, but as no purchases have been made, I am unable to report the probable out-turn.

"*Rations for Europeans.*—With the exception of meat and wood, no articles of rations "for European troops are procurable, and it would appear that all must be imported either "from India or Egypt.

"*Rations for Natives.*—The above remarks also apply here. There is nothing to be "had until the highlands of Abyssinia are reached.

"*Forage and Grain for Horses and Cattle.*—Neither forage or any description of "grain can be obtained; camels can graze; on the seaboard vast quantities of low "jungle, principally of the soda plant, abound, affording suitable grazing for almost any "number of camels, and I learn a sufficiency of grazing is to be found also for the onward "march, but no grass or grain; and it will be necessary to store both of these articles at "the several halting-grounds until Takoonda on the highlands is reached. A sufficient "supply should, therefore, be sent as early as possible, as much time will necessarily be "required ere such bulky articles can be conveyed and stored long distances inland.

"*Wood.*—Large quantity of drift wood is to be found on the sea coast, and also dry "jungle wood close to camp, the supply is considerable. Quantities of dry cow-dung cover "the ground, very suitable for the use of followers. It does not appear at all necessary "to send wood for the troops.

"*Water.*—The water is close to the camp, about a mile from the seashore. Although "muddy it is sweet and fit for use. Some alum might be sent up to quicken the deposit. "With reference to its quantity and sufficiency for the Army and Transport Corps animals, "doubtless a report will be forwarded by the superior officers of the reconnoitring party.

"*Piers and Cranes.*—It will be essentially necessary that the Commissariat Depart- "ment possess its own pier, with two travelling cranes. It will be impossible to land by "manual labour the vast masses of stores required for the force. A tramway to the depôt "sheds would also be invaluable, and save any unnecessary employment of transport "animals, and the labour and confusion of loading and unloading animals for the short "distance of a mile, where the depôt sheds will probably be erected.

"*Baggage Animals and Equipments.*—I learn a large number, from 4,000 to 5,000 "camels, and possibly 2,000 mules, could be purchased in this neighbourhood, and near "Massowah and its vicinity. It will be necessary, however, to send all equipments from "India.

"*Leeches.*—I was informed by Surgeon Turner, at Aden, that the breeding season "has passed, and that it is too late now to make arrangements for such a supply at his "station. He could, however, spare perhaps 100 to 200 leeches a-month.

"*Fowls*—Can be purchased in fair numbers at Massowah, also from Lohea and "Hodeida, from whence they are principally brought; doubtless our requirements would "be met on information being sent to those parts.

"*Limes and Plantain Leaves.*—Occasionally a few limes are to be had at Mussowah, "but no plantain leaves.

"*Rice and Jowaree for Camel Drivers.*—Quantities could be got from Lohea and "Hodeida, but the rates are high. Rice is imported from India, and it would, therefore, "be cheaper to get the articles direct. The rate of jowaree at Mussowah is about 16 lbs. "for the rupee. It would be cheaper at the export ports, and still cheaper, I think, in "Bombay. If jowaree could be got much cheaper than rice, a saving would be effected, "as it might be issued to camel drivers, whose staple food it is.

"Secondly, as regards our requirements after reaching the highlands of Abyssinia. "I am informed by M. Münzinger that forage, also grain, consisting of wheat, gram, barley, "peas and beans; also cows and sheep are procurable. I conclude a certain number of "month's stock will accompany the Army, allowing of time to make purchases from local "sources, and it is possible that the country will afford all our wants of grain, meat, "forage, &c. Ghee is also to be had in large quantities in Abyssinia.

"*Depôt.*—It is of the utmost importance that the depôt on the seaboard be set to

" work at once. An establishment of 2 officers with clerks, 2 conductors and 4 sergeants, " with 2 overseers, and some 6 or 8 inspectors, also weighing men, will be required to " discharge cargo, to receive the stores, and to arrange for their onward dispatch. The " sooner these arrangements can be completed the sooner we shall be in a position to " meet the demands which will ere long be preferred on us. No reliable or efficient " labour can be secured here. It is a very great want; it is of the first consequence that " the depôts be provided with a sufficiency of Hamals regularly organized and trained to " work. I would suggest that a company of 500 men be sent complete with muccadums.* " These could perform the work of the depôt here and the four or five intermediate depôts " that may have to be formed in the lowlands. I have no hesitation in saying that, in the " absence of such a company, the stores cannot be landed, housed, or dispatched. The " Arab, or Sahoo drivers, cannot be depended upon for such work.

" *Depôt Boats.*—There are no boats on this coast, a want that cripples all action. " Colonel Merewether informs me that he has ordered a number to be sent from Aden, " and has also directed me to write to Major Clements to send some for the Commissariat. " I shall apply for ten at present, to be hired by the month.

" *Commissariat Water Supply.*—A certain number of bheesties will be required to " supply water to the Commissariat followers, hamals, employed at the landing-place. " There is no water within a mile of the seashore. A number of small hand mussucks and " galvanized iron buckets, with 20 feet of rope each, would also be very valuable, but a " proportion of bheesties for each Division, Brigade, and Depôt Commissariat, and for the " working hands at the port, is essentially necessary.

" *Tools for Commissariat Followers.*—Bill-hooks and hatchets are required to cut " wood, and also shovels to level ground and dig trenches and water ways. The iron hoes " shipped as dead stock are only suitable for ship's use. The powrahs or shovels should be " light, but strong.

" *Carriage and Tents for Commissariat Followers.*—A proportion of rowtees or other " tents will be required for Commissariat, Warrant, and non-commissioned officers and " clerks, inspectors, and overseers, according to their standing, and a certain weight of " baggage will have to be carried for them at the public expense. It is necessary to fix " the allowance for each for warrant officers, sergeants, overseers, weighing men, mucca- " dums, and drivers. The line gear and cattle medicine must also be carried. To allow " the drivers to place their bedding, cooking pots, &c., each on his own animal is objec- " tionable when the weight of the public stores amounts to nett 200 lbs. for a mule, and a " hilly country to be traversed. That some allowance is necessary will, I am sure, be " admitted; the men must have bedding and clothing; that they keep their health and " working condition is a matter of importance to us.

" *Rates of Recovery for Grain and Forage.*—This information is required for " issues of grain and forage to Native Cavalry and officers' horses. A fixed daily rate " would be the most simple.

" *Sickles.*—I would suggest that every muleteer leaving India be supplied with a " good saw-edged cutting sickle. The handle to be rivetted to the sickle, and not merely " thrust into it as is usual.

" *Paulins.*—A large number of paulins of different sizes will be required to " protect the stores on the line of route. We have heavy rain here, and it is continuous " from December to March. Those articles are of the very greatest importance.

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* 500 men for depôts.

"*Medicine, Cattle.*—The mules sent from Poona have no medicines. I would "suggest that a number of boxes, fitted with tin canisters and bottles, be made up to "contain the following for each division of 1,000 mules:—10 lbs. powdered ginger, 6 lbs. "sulphate of antimony, 10 lbs. saltpetre, 4 lbs. resin, 3 lbs. camphor, 2 lbs. Venice tur- "pentine, 4 lbs. alum, 2 lbs. sulphate of zinc, 4 lbs. blistering ointment, 4 lbs. dickamalee "oil, 2 gallons turpentine, 2 gallons oil (sweet), 3 syringes, 2 ounce, 1 patent clyster pipe, "6 scalpels, pestle and mortar wedgewood ware, weights and scales, small, 2 oz. to ½ dr.

"*Cattle Equipment.*—A number of the head-stalls, &c., of the Poona mules are "already unserviceable. I suggest that only new articles be sent up from India, and that "a number of spare sets, with a few hides, wax, twine, gunnypaut and numdah for repairs, be "forwarded at once. The equipments of the Poona mules will not last long. I learn that "5,000 camels expected from Aden, although they will have saddles, will require both "sulleetahs and ropes. The 5,000 camels to be hired in this neighbourhood, as also mules, "probably 2,000, will also require a complete set of equipments each. The subject of "equipments, however, has doubtless been duly considered and provided for. I merely "note that none are to be had here.

"*Sheds for Stores at Depôt.*—I would submit that all sheds sent up to be furnished "with either galvanized iron or plank sides, for without, a sufficient protection would not "be afforded to the stores from the very heavy rains on this coast.

"*Mule Attendants.*—I believe a large number of mules are shortly expected from "Europe and Egypt. A transport establishment of inspectors, weighing-men, and mucca- "dums and drivers, will be required. The men engaged in Egypt might serve as drivers, "but it is more than probable that the men from the Levant would not answer our purpose. "I would suggest for consideration whether it would not be better to send up in the trans- "ports from Bombay, drivers, say one man to three or four mules, to tend the animals "during the voyage, and the rest with officers, inspectors, muccadums, &c., here to be "ready to receive the mules as they arrive.

"*Transport Corps.*—I would respectfully request that the officers, clerks, and other "establishments, with all equipments that are ready, be sent up at once. I have no men "to receive charge even of the camels or mules now very shortly expected, much less of "those that may arrive from Suez ere long. Issues having had to be made on board both "ships, as also on shore, and the stores received and discharged, has left me without a "single man available for any other work.

"*Transport Corps Followers.*—I have already demi-officially suggested the necessity "of some simple system for the registration and payment of the followers of the "Transport Corps. I fear our system of nominal Rolls will be found out of the question, "and quite impracticable with such a mass of men of different races, as also with men of "the same race, such as Arabs, &c., very many of whom have the same name. Perhaps a "system of tallies might be introduced with the plates of different shapes for the "different branches, such as camels, mules, and bullocks, consecutively numbered, to be "worn round the neck. A large number of these might be stamped, or, better still, cut "out of tin, packed in boxes of 50 or 100, and marked and numbered externally to "prevent confusion. I merely offer the suggestion for your consideration; it can "doubtless be improved.

"*Family Remittances of Commissariat Followers.*—I would submit the advisability "of discouraging as much as possible the system of family remittances. It necessitates "the keeping of several documents to be copied and transferred from place to place, "division to division, &c., &c., as the exigencies of the Service may require, and from "similarities of names and other causes such as sickness, deaths, transfers, &c., &c., very

" liable to lead to mistakes, loss of money, and endless confusion in the accounts. On " mentioning this subject to Colonel Merewether, he informs me he will recommend a " system of remittances through the General Paymaster, that followers will be able to obtain " from him an order for India, which will render departmental remittances unnecessary.

" *Payment of Dhooly Bearers and other Regimental Establishments.*—I conclude the " system observed in India will apply in regard to the payment of each follower by the " Regimental Paymasters. That although the establishment of bheesties, bearers, and " hospital followers have been provided by the Commissariat, the Department will not " be called upon to pay them.

" *Issues to Canteen.*—I also conclude that the Indian system will be observed—that " no money payment will be made to the Department by Regimental Paymasters.

" *Lamps for Tents.*—If this is to be a Commissariat supply, I would recommend " the strong cabin lamp, protected by wire of English manufacture, or the Tucker's lamp. " The bazaar-made Indian tent lamps are next to useless, and are unserviceable after a " week's use.

" *Regimental Victualling Establishment.*—I would also respectfully suggest each " regiment, Native or European, and each battery of Artillery, &c., &c., be sent up com- " plete in itself, with its Field Commissariat Victualling Establishments, such as inspectors " weighing-men, peons and biggaries, and tinmen, that these men be permanently attached, " and thus allow the regiment or detachment to march complete in itself. That the " Executive Commissariat Officers being with them be distinct to replace casualties in the " above, and to make issues from their stores, whether from the depôt, division, or " brigade, as the case may be.

" *Establishment for Repair of Equipments.*—It is essentially necessary that each " hundred mules be provided with two nalbunds and two mooches, to shoe the animals and " to repair the equipments. I have at present only one nalbund and one moochee for the " mules sent from Poona, and even these were sent in the first instance without these " necessary men. The wear and tear of equipments will be very great, and, therefore, " the peace establishment of India would not suffice either in men or materials for the " work to be performed. Materials in leather, wax, twine, and gunnypaut, numdahs, and " dungaree, will be very necessary.

" *Depôt and other Store Establishments.*—In the list framed by me at Poona I only " mentioned a few biggaries necessary for store purposes. I conceived they might form a " nucleus of labour, but it will be necessary to double if not treble the numbers, owing to " the want of suitable labour in this country. I would most respectfully submit that very " large establishments in every grade of the Department should be sent up, and that the " preconceived ideas of what is necessary in Indian campaigns, and found necessary in " Persia, be not allowed to form the basis of the calculation for this expedition. We " shall require large extra establishments in excess of those I thought necessary in India; " and I cannot but believe that in the end not only efficiency but economy will be secured " by giving very liberal establishments to all Commissariat officers, whose best energies " would be neutralized by any deficiency in this respect.

" *Stores consigned to the Force.*—I would submit that stores consigned for the " Ordnance and Engineer Departments be not consigned through the Commissariat " Department, which will have enough to do to land its enormous supplies. A division of " labour would simplify business; other branches of the Service could arrange to land " their stores, and indent on the Land Transport for necessary carriage and the naval " transport officers for the boats required for this purpose, as was done in Persia.

" In conclusion, I would earnestly solicit further establishments of *Inspectors*,

"*Depôt* and *Transport Officers*, and *Coolies*. I hear the 10th Regiment and Sappers may "arrive in a day or two, and I have no carriage to move the stores, or to provision such "a force on our leaving this for the water in the interior, some 16 miles off, in a day or "two."

The following letter and statements from the Commissary-General to the Secretary to Government, dated Bombay, 30th November, 1867, show the Commissariat preparations made at Bombay by the end of November :—

Preparations made in Bombay by the end of November.

"In reference to the Government Resolution, No. 4413, of 16th instant, I have the "honour to submit for the purpose of being laid before his Excellency the Right "Honourable the Governor in Council, the following statements :—

"*Statement No.* 1, exhibiting three months' shore rations for the whole force, "six months' shore rations for 9,500 men, with their followers; also for "14,500 Commissariat followers, 3,000 horses, 16,000 mules and tattoos, "8,000 camels, 4,000 pack bullocks, and 1,000 draft bullocks, including the "horses, &c., of the mounted corps.

"*Statement, No.* 2, exhibiting the supplies already prepared at Bombay and "other stations to meet demands as per Statement No. 1, and the quan- "tities wanted to complete the stock.

"*Statement, No.* 3, exhibiting the quantities of shore rations already dispatched "to Zula.

"It will be observed from the Statement No. 2 that the following articles are "required to complete the supplies, as per Statement No. 1.

"FOR EUROPEANS.

"Flour, 1st sort, 313,540 lbs. 150,000 lbs. of biscuit have been ordered to be "sent from Bombay, and the balance will be obtained from Egypt.

"FOR NATIVES.

"Rice, Bengal, 3,436,652 lbs. One-half of this supply has been ordered from "Calcutta, and the balance from Bombay.

"Flour, 2nd sort, 704,308 lbs. This demand will be met from the 1,500,000 "lbs. of wheat ordered from Egypt and Calcutta.

"Doll, 763,170 lbs. This supply has been ordered partly from Bengal, and "partly from Bombay.

"Ghee, 207,646 lbs. This supply has been ordered from Bombay. Ghee is "reported to be procurable at Mussowah also.

"Salt, 117,785 lbs. This supply has been ordered from Bombay.

"FOR HORSES.

"Grain, 13,158,320 lbs. The total quantity of grain required is 25,524,360 "lbs., and to meet this demand arrangements have already been made for "nearly 13,200,000 lbs. of grain, as per Statement No. 2. The balance "will partly be sent from Calcutta, and partly from Bombay.

"Forage, 62,973,850 lbs. The total quantity of forage required amounts to "102,965,850 lbs., and to meet this demand arrangements have already "been made for 39,992,000 lbs., and the balance will be sent from "Bombay.

"During the monsoon months a sufficient supply of forage was not procurable

"either at Bombay or out-stations, and therefore it became necessary to purchase "forage by instalments, to prevent extraordinary rise in the market.

"Nine lac lbs. of forage were purchased at Kurrachee, but no more can be "obtained at that place, the Commissariat Officer there having reported that, if further "supply of forage be drawn from Scinde, serious inconvenience may result to the Govern- "ment horses and cattle there.

"Twenty lac lbs. of hay were ordered from Bengal, and the Commissary-General "there has since intimated to me that he can hardly meet that demand, and therefore a "further supply of this article is not available from that place.

"Twenty lac lbs. of compressed forage were ordered from England, but it appears "from the latest advices that a portion of this supply has been dispatched to the port of "debarcation with an intimation that this stock is not kept in stock by the trade there, "and therefore the whole quantity cannot be delivered in time for dispatch in the "steam-transports.

"Fifty lac lbs. of straw, and 800 tons of compressed forage, have been ordered "to be sent from Egypt.

"Colonel Merewether has ordered the issue of only 15 lbs. of hay to each horse, "and 12 lbs. to each mule. If this arrangement is sanctioned by the Government, it "will reduce the quantity of forage to be sent from Bombay to Zula nearly 25 per cent.

"The Statement No. 2 shows the quantity of ration articles already prepared in "Bombay. From this supply the stock for six months' rations for 9,500 men, and for two "months' shore rations for the followers and animals, is under shipment on three trans- "ports, with the exception of grain and forage for animals, of which only such stock as is "ready will be shipped.

"Three months' provisions* for 4,000 Europeans have been received from England. "These provisions have been ordered to be sent to Zula, to be kept there for use on "shore, if necessary, or for issue to the troops on their return voyage.

"The men of the Bengal Brigade are taken into account in calculating three "months' stock† for the whole force, and for 9,500 men, but two months' shore rations "will also be shipped at Calcutta for the Bengal Brigade.

"Captain Willoughby reported that in sending two cargo ships, he has made "provisions for two months' shore rations of barley, and about six weeks' ration of "straw for the number of mules and horses sent from Suez. It is stated that he will not "be able to keep this up, owing to the ships not taking many days' rations, but he will "arrange to ship as much forage as the vessels will carry.

"Major Mignon has applied to the Commissariat Officer at Aden to send to Zula "40,000 lbs. of jowaree, and to keep ready and send 40,000 lbs. more; also a month's "supply of rice, flour, dholl, and salt for all drivers he may send from Aden. It is "reported that ghee could be got cheaper from Mussowah.

"The Commissariat Officer in the Persian Gulf has a stock of grain and forage "awaiting tonnage for sending it to Zula.

"Out of the supplies ordered from Egypt the following have been shipped for "Zula, viz.:—

"Barley, $9\frac{1}{2}$ lac lbs. ($3\frac{1}{2}$ lac lbs. returned); beans, $10\frac{1}{2}$ lac lbs.; straw, $8\frac{3}{4}$ lac. lbs.; "wheat, $1\frac{3}{4}$ lac lbs.; patent forage, 130 tons; pressed hay, 15 tons.

"A large portion of the supplies prepared at Calcutta has been sent to Zula.

"The supplies prepared at Kurrachee are awaiting tonnage. The ship 'Pride of "the Ganges' has been taken up for the conveyance of the same."

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* With the exception of biscuit and flour.

† As per Statement, No. 1.

No. 1.

The following Statement exhibits the number of Troops, &c., for whom Shore Rations had been ordered to be prepared up to the 30th November, 1867, and the Period for which they were calculated.

	Europeans.													
	Biscuit.	Flour, 1st Sort.	Meat, Salted.	Arrack.	Porter.	Rice, Vergole.	Sugar, Bengal.	Tea, Black.	Salt, 2nd Sort.	Wood, Fine.	Onions.	Potatoes.	Pickles.	Preserved Vegetable.
Three Months' Shore Rations for the whole Force.	lbs. A	lbs.	lbs. A	Glls.	Hhds. B	lbs.	lbs.	lbs.	lbs.	lbs.	lbs. B	lbs. B	lbs. B	lbs. C
3,709 Europeans	111,270	222,540	111,270	16,690	268	83,453	52,158	14,903	13,910	1,001,430	13,909	41,726	2,800	27,813
3,638 Natives	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2,470 Public Followers	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2,084 Private Followers	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2,686 Horses	..	..	..	..	..	..	..	..	..	..	..	..	..	..
47 Mules	..	..	..	..	..	..	..	..	..	..	..	..	..	..
462 Bullocks	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Six months' Shore Rations for—														
5,800 Natives	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3,700 Europeans	..	666,000	..	33,300	..	166,500	104,063	29,732	27,750	1,998,000	..	..	..	..
4,156 Public Followers	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1,962 Private Followers	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14,500 Commissariat Followers	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3,000 Horses	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16,000 Mules and Tattoos	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4,000 Pack Bullocks	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3,000 Camels	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1,000 Draft Bullocks	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	111,270	888,540	111,270	49,990	268	249,953	156,221	44,635	41,660	2,999,430	13,909	41,726	2,800	27,813

A For one Month only.

B For fifteen days only.

C For one Month only.

No. 1—*continued.*

	Natives.							Cattle Ration.				
	Rice, Bengal.	Flour, 2nd Sort.	Wheat.	Dhall.	Ghee.	Salt, 2nd Sort.	Wood, Fine.	Hay.	Straw.	Grain, Raw.	Barley.	Beans.
Three Months' Shore Rations for the whole Force.	lbs. D	lbs. D	lbs.	lbs.	lbs.	lbs.	lbs. A	lbs.	lbs.	lbs.	lbs.	lbs.
3,709 Europeans	..	..	..	..	..	..	..	..	..	..	..	..
8,683 Natives	912,240	651,600	..	195,480	97,740	32,580	260,640	..	..	..	..	..
5,479 Public Followers	439,762	307,833	..	123,075	30,768	20,513	164,100	..	..	..	..	..
2,964 Private Followers	109,410	78,150	..	46,890	..	..	62,520	..	..	..	..	..
2,686 Horses	..	..	..	..	..	..	..	4,834,800	..	1,933,920	..	..
47 Mules	..	..	..	..	..	..	..	63,460	..	16,920	..	..
482 Bullocks	..	..	..	..	..	..	..	867,600	..	173,520	..	..
Six Months' Shore Rations for—												
5,800 Natives	1,566,000	522,000	..	261,000	130,500	43,500	..	..	..	..	..	..
3,700 Europeans	..	..	..	..	..	..	..	..	..	..	..	..
4,156 Public Followers	841,590	280,530	..	187,020	46,755	31,170	..	..	..	..	..	..
1,902 Private Followers	256,770	85,590	..	85,590	..	..	..	..	..	..	..	..
14,500 Commissariat Followers ..	2,936,250	978,750	..	652,500	163,125	108,750	435,000	..	..	..	..	..
3,000 Horses	..	..	..	..	..	..	..	10,800,000	..	5,400,000	..	..
16,000 Mules and Tattoos ..	..	..	..	..	..	..	..	43,200,000	..	11,520,000	..	..
4,000 Pack Bullocks	..	..	..	..	..	..	..	10,800,000	..	1,440,000	..	..
8,000 Camels	..	..	..	..	..	..	..	28,800,000	..	4,320,000	..	..
1,000 Draft Bullocks	..	..	..	..	..	..	..	3,600,000	..	720,000	..	..
	7,052,022	2,904,303	..	1,551,555	468,888	236,513	922,260	102,965,350	..	25,524,360	..	..

A. For one month only.

D. For the first two months, half of each, and for the remainder, three-fourths of Rice, and one-fourth of Flour, 2nd sort.

No. 2.

The following Statement shows the quantities of Provisions and Forage ordered from Bombay and elsewhere.

	Europeans.													
	Biscuits.	Flour, 1st Sort.	Meat, Salted.	Arrack.	Porter.	Rice, Vergole.	Sugar.	Tea, Black.	Salt.	Firewood.	Onions.	Potatoes.	Pickles.	Preserved Vegetables.
	lbs.	lbs.	lbs.	Gallons.	Hhds.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Bombay	111,270	75,000	6,170	15,990	268	219,853	156,221	44,635	41,660	2,999,430	13,909	41,726	2,800	7,464
Poona	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Egypt	..	300,000	..	..	..	..	..	..	..	..	..	..	..	..
Kurrachee	..	..	..	4,000	..	..	..	..	..	..	..	..	..	..
Sholapoor	..	..	..	..	..	..	..	..	..	..	..	..	..	..
England	..	..	105,100	..	..	..	..	..	..	..	..	..	..	30,000
Calcutta	..	200,000	..	30,000	..	30,000	..	..	..	..	..	..	..	..
Total supplies ordered ..	111,270	575,000	111,270	49,990	268	249,853	156,221	44,635	41,660	2,999,430	13,909	41,726	2,800	37,464
Balance required	..	313,540	..	..	..	..	..	..	..	..	..	..	..	..
Balance in excess of requirements	..	..	..	..	..	..	..	..	..	..	..	..	..	9,646

No. 2—*continued.*

	Natives.							Animals.				
								Forage.		Grain.		
	Rice, Bengal.	Flour, 2nd Sort.	Wheat.	Dhall.	Ghee.	Salt, 2nd Sort.	Firewood.	Hay.	Straw.	Grain, Raw.	Barley.	Beans.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Bombay	2,316,368	1,800,000	..	668,335	161,242	118,728	444,750	15,600,000	6,500,000	2,229,240	436,800	..
Poona	..	400,000	..	..	..	..	..	700,000	..	..	..	..
Egypt	..	..	1,000,000	..	..	..	..	1,792,000	5,000,000	..	1,000,000	1,000,000
Kurrachee	..	..	..	..	50,000	..	500,000	900,000	..	1,700,000	1,700,000	..
Sholapoor	..	..	..	..	..	..	..	500,000	..	..	..	..
England	..	..	..	..	..	..	..	200,000	..	..	..	..
Calcutta	300,000	..	500,000	100,000	50,000	..	..	2,000,000	5,000,000	4,000,000	..	..
Total supplies ordered ..	2,616,368	2,200,000	1,500,000	768,335	261,242	118,728	944,750	23,492,000	16,500,000	8,229,240	3,136,800	1,000,000
Balance required	3,436,654	4,704,308	..	768,170	207,646	117,735	..	62,973,850		18,168,320		
Balance in excess of the requirements	..	..	1,500,000	..	..	..	22,490	..		..		

No. 3.

The following Statement exhibits the Shore Rations shipped for the Troops proceeded to Abyssinia up to the 27th November, 1867.

	Europeans.													
	Biscuit.	Flour, 1st Sort.	Beef.	Pork.	Onions.	Potatoes.	Porter.	Rice, Vergole.	Spirit, Proof.	Sugar, 2nd Sort.	Salt, 2nd Sort.	Tea, Black.	Wool, Flan.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	Hhds. Doz.	lbs.	Gallons.	lbs.	lbs.	lbs.	lbs.
For the Reconnoitring Party as per Statement No. 1	..	..	..	..	..	..	..	..	..	..	..	..	..
For the Advance Brigade as per Statement No. 3	2,760	2,760	1,864	936	345	1,035	0 12½	4,140	192	2,588	..	740	2,540
For the Scind Brigade as per Statement No. 4	28,515	28,580	..	..	3,729	10,748	69¼ 11¼	14,415	2,186⅔	9,160	2,428	2,592½	143,470
For the Followers and Animals as per Statement No. 7	2,220	2,140	440	438	285	825	5 8½	1,125	170⅔	702⅙	194	206¼	12,780
For the Scind Horse as per Statement No. 5	..	..	..	..	..	..	..	..	..	..	..	..	..
For the Troops as per Statement No. 6	900	850	472	378	107	313	1 0	495	45	301	96	96	5,040
Total	34,395	34,330	2,776	1,752	4,466	12,921	75¼ 22½	20,175	2,594⅓	12,751⅙	2,718	3,632½	170,830

No. 3—*continued.*

	Natives.								Cattle Ration.		
	Dhall.	Flour, 2nd Sort.	Ghee.	Salt, 2nd Sort.	Rice, Bengal.	Wood, Fire.	Tobacco.	Turmeric.	Grain, Raw.	Hay.	Barley.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
For the Reconnoitering party, as per Statement No. 1	8,314	25,292	2,842	1,407	25,292	32,211	..	..	95,700	93,208	..
For the Advance Brigade, as per Statement No. 3	132,255	453,525	49,299	23,078	529,275	182,085	..	..	940,700	691,200	..
For the Scinde Brigade, as per Statement No. 4	27,120	84,630	9,207½	4,604	84,630	53,350	..	..	113,775	321,000	..
For the Followers and Animals, as per Statement No. 7	21,975	88,200	10,193	4,285	88,200	68,940	4,651	467	15,000	510,975	64,800
For the Sebul Horse, as per Statement No. 5	20,925	68,400	6,303	3,375	68,400	40,050	..	..	478,725	1,121,250	..
For the troops, as per Statement No. 6	10,500	32,475	2,953	1,725	32,475	26,910	..	..	56,475	1,800	..
Total	220,189	752,522	80,797½	38,474	828,272	404,046	4,651	467	1,697,375	2,739,435	64,800

Statement No. 2 shows the Provisions shipped from Calcutta.

The following Returns show the state of the Commissariat stores in Africa landed and on board ship at Zula, on the 3rd January, the date of the arrival of the Commander-in-Chief:—.

Commissariat stock in Africa on Sir R. Napier's arrival.

Provisions, &c.	Quantities.	Number of days set apart for 1,000 Men.	Remarks.
For Europeans:—		Days.	
Spirits .. .. .. gallons	27,976	560	
Biscuits .. .. .. lbs.	33,480	33	
Wheat for flour	222,900	202	384
„ for bread			
Flour, 1st sort	182,054	182	
Rice	381,702	1,324	
Salt	23,038	384	
Tea	3,531	60	
Sugar	17,390	86	
Potatoes	16,353	21	
Onions	5,588		
For Natives:—			
Rice	1,145,105	3,972	
Flour, 2nd sort	1,092,150	1,092	
Dholl	464,280	1,875	
Ghee	69,035	987	
Salt	69,012	1,152	
Forage:—			
Grain	2,160,927	270	For 1,000 horses.
Hay	2,732,445	182	„ „
Compressed forage	208,480	10	„ „
Chopped straw	206,640	17	For 1,000 mules.

The Stores at Inland Depôts at this time were as follows:—

Stores at inland depôts on Sir R. Napier's arrival.

Depôts.	European Rations.	Native Rations.
Hadoda	*5,000* Rations, *i.e.*, for *500 men* for one day	10,000 Rations, *i.e.*, for 1,000 men for 10 days.
Kumayli	4,000 Rations, *i.e.*, for 1,000 men for 4 days	10,000 Rations, *i.e.*, for 1,000 men for 10 days
Upper Suru ..	2,000 Rations, *i.e.*, for 1,000 men for 2 days	4,000 Rations, *i.e.*, for 1,000 men for 4 days.
Ragahedi ..	2,000 Rations, *i.e.*, for 1,000 men for 2 days	4,000 Rations, *i.e.*, for 1,000 men for 4 days.
Undul Wells ..	2,000 Rations, *i.e.*, for 1,000 men for 2 days	4,000 Rations, *i.e.*, for 1,000 men for 4 days.
Senafé	For 1,000 Men.	For 1,000 Men.
	Spirits .. .. .. for 16 days.	Rice .. .. for 150 days.
	Biscuits .. .. .. „ 20 „	Flour .. .. .. „ 150 „
	Flour for Bread .. .. „ 16 „	Dholl .. .. „ 150 „
	Rice .. .. „ 24 „	Ghee .. .. „ 48 „
	Sugar .. .. „ 28 „	Salt (can be locally purchased) „ 12 „
	Salt (can be locally purchased) „ 4 „	Grain (for 1,000 horses) .. „ 11 „
	Tea .. .. „ 12 „	
	Potatoes, fresh .. .. „ 4 „	
	Onions .. .. .. „ 2 „	
	Preserved potatoes .. .. „120 „	
	Compressed Vegetables .. „ 40 „	

Forage.

Hadoda.—Grain for 16 days for 1,000 horses, and hay for 3 days for 1,000 horses.
Kumayli.—Grain for 1,000 horses for 7 days, and hay for 1,000 horses for 3 days; also compressed forage for 1,000 horses for 4 days.
Upper Suru.—Grain for 1,000 horses for 12 days.

Slaughter yard and slaughter cattle.

Commissariat arrangements, as shown in Chapter IX,* were first organized in Africa by Major F. P. Mignon. This officer generally superintended all arrangements at Zula, in the passes, and at Senafé, till the arrival of Lieutenant-Colonel A. Lucas, the Deputy Commissary-General.

Under Major Mignon's superintendence, a slaughter-yard was erected to the south of the camp at Zula, and kept scrupulously clean, the offal being removed daily and buried at a considerable distance. The carcases as slaughtered were removed and brought to the hanging room; they were hung up for the night, and cut up into joints previous to issue next morning at the ration stand. A stock yard and sheep-fold were put up near the slaughter-yard; the animals were carefully watered and grazed, and also had fodder in the yard for night feeding.

Purchase of cattle.

The Commissariat purchased during the first three months at Zula, 855 cattle and 2,173 sheep, in the neighbourhood, from the natives of the country, at prices averaging 8 dollars a cow and 1 dollar a sheep. The cattle were generally in fair condition, but small, and yielded good, wholesome beef, the out-turn for issue averaging 144 lbs.

Sheep.

The sheep were small and not as good as the cattle, the average out-turn was only 16 lbs. The sheep received from Berbera were superior, they were the fat tailed variety, and, although small, were always in good condition. These were generally issued at 30 lbs. each.

Issue of meat.

Meat was issued to the native troops and followers from the 20th January, 1868. They preferred to slaughter for themselves, and took goats in preference to sheep. The average price was one dollar each, and the animals issued averaged the weight of 16 lbs. each.

Bakery.

The bakery was established at Zula on the 25th December, 1867, and on the same day at Kumayli: the average issue of bread at these posts in January was 1,650 loaves daily. The bread was of fair quality. The establishment at Zula consisted of 1 clerk, 1 master baker, 15 assistant bakers, 5 coolies; at Kumayli, of 1 master baker, 15 assistant bakers, 5 coolies; and a further establishment of 1 master baker, 15 assistant bakers, 5 coolies, was sent to Senafé, where bread was daily supplied to the troops from the 12th January, 1868, to the end of the campaign.

Bakery establishment.

Ovens.

The ovens used were taken from Bombay, and were the ordinary field ovens in use, made of plate iron, one in two pieces for camel carriage, each piece weighing 237 lbs.; and the other in four sections for mule carriage, each section weighing 108 lbs. They each held 100 1 lb. loaves, and baked them in one and a half hours. These last were subsequently used in the highlands on the return march from Antalo. The ovens were strong, and could be put together in less than five minutes, and pulled down and loaded as easily and quickly. An establishment of 69 women, with millstones for grinding corn, was sent from Bombay, and was subsequently employed in grinding the wheat received from India. Sheds were erected for the bakery close to the lines of the Commissariat followers.

* See pages 321 to 324.

The scale of rations issued to troops and followers on first landing was as follows;—

Scale of Rations on first landing.

To each European per diem.

1 lb. biscuit or fresh bread.	4 oz. rice.
1 „ fresh meat.	$\frac{5}{7}$ „ tea.
1 „ vegetables.	$\frac{2}{3}$ „ salt.
$2\frac{1}{2}$ oz. sugar.	3 lbs. firewood.

To each Native Soldier.

2 lbs. rice or flour.	$1\frac{1}{2}$ oz. tobacco, or 3 oz. sugar.
4 oz. dholl.	$\frac{1}{7}$ „ pepper.
2 „ ghee.	$\frac{1}{8}$ „ turmeric, and $\frac{1}{2}$ oz. chillies.
$\frac{2}{3}$ „ salt.	

Each Native Public or Private Follower.

$1\frac{1}{2}$ lbs. rice or flour.	1 oz. ghee.
4 oz. dholl.	$\frac{2}{3}$ „ salt.

Each Horse.

15 lbs. hay.	8 lbs. gram.

Each Mule.

12 lbs. hay.	5 lbs. gram.

Each Camel.

5 lbs. gram.	12 lbs. hay.

Each Bullock.

4 lbs. gram.	20 lbs. hay.

Each Elephant.

175 lbs. hay.	2 oz. salt.
25 lbs. flour.	15 lbs. firewood.

Equalization of rations of public and private followers.

By the Indian scale, private followers were only allowed each half the ration of a native soldier. The scale was inadequate, no supplies to eke out the allowance being procurable at any cost, and they consequently received, on payment, provisions on the scale of a public follower, a rule observed throughout the campaign. From the 20th January, 1868, the native troops and followers received, in addition to the scale given, 8 oz. of fresh meat each twice a-week, and the public and private followers 4 oz. each twice a-week.

Recoveries for rations issued on payment.

Rum issued to the soldier was charged for at $2\frac{1}{3}$ rupees the gallon, 24 degrees under London proof, and recovered from the officers commanding regiments.

Rum issued to officers was charged for at 5 rupees the gallon, and paid for on delivery. The issue was limited to 2 drams per diem.

The following were the rates of recovery for rations:—From officers, 8 annas per diem; from private followers, 1 anna and 4 pies; for officers' horses, 12 annas.

These recoveries were effected by Paymasters, monthly, from officers' pay. Gentlemen attached to the Force paid at the same rate, in advance, direct to the Commissariat, when a certificate, specifying the date up to which payment had been received, was granted, on the presentation of which at any of the inland depôts, they received rations daily up to the date for which payments had been made.

During the months of October, November, and December, the issues at the Zula depôt were in rations :— Issue of rations at Zula during the first three months.

For European troops	21,499	For Horses	5,791
„ Native „	65,315	„ Mules	56,890
„ Public followers	104,671	„ Camels	19,730
„ Private ditto	10,415	„ Bullocks	4,312

And although numbers of troops, followers, and cattle were constantly leaving for the interior, the number of rations issued at Zula in January were :— Issues in January.

For European troops	39,739	For Horses	7,774
„ Native „	83,332	„ Mules	20,475
„ Public followers	120,710	„ Camels	3,005
„ Private „	12,952	„ Bullocks	5,943

The three hospital ships for Europeans, the "Golden Fleece," "Mauritius," and "Queen of the South," were supplied with fresh provisions daily, as also the hospital ship "Star of India," for natives. Fresh provisions to hospital ships.

The ships of the Bombay Marine, and the tugs employed in the harbour, were also provisioned by the Commissariat.

Bread was made at first from first sort flour received from Calcutta and Bombay, and subsequently with a portion of Trieste flour, which improved the quality. It was always approved of, and the supply was continuous at Zula from the 26th December, 1857, when the bakery commenced working. Biscuit was issued on first landing. It was of excellent quality, manufactured by machinery at the Government Steam Bakery, at Poona. It kept good for a very long time, and was never flinty. Quality of rations. Bread. Biscuit.

Fresh meat was always supplied to the troops. It was purchased on the spot slaughtered and issued by the department, and was of fair quality. Meat.

Two descriptions of flour were issued, both of good quality. First sort for European troops and the manufacture of bread, and second sort (coarser) for native troops. Flour.

Two descriptions of rice were issued. Rice, vergole, first sort, for European troops, and rice, Bengal, for natives. Both were good. Rice.

Dholl for issue to natives, the Bombay dholl was more approved of than that from Calcutta. Dholl.

Black tea of good quality was issued in the usual proportion to all the European troops. Tea.

Sugar and salt were reported on favourably. Sugar and salt.

The ghee (clarified butter) was good. The Bombay tins weighed 35 lbs. each; the Calcutta 38 lbs., two in a box, for mule carriage. Ghee.

The rum was good. The supply from Calcutta was sent in hogsheads, the Jamaica rum from England was very good and received in convenient kegs of 6½ imperial gallons each. Rum.

The porter was good; and was issued at 12 annas the gallon. Porter.

The native tobacco was good. That for Europeans was also approved, and was sold at 14 annas the lb. Tobacco.

Curry stuff. The curry stuff was good.

Vegetables. Vegetables were received from Bombay and also from Egypt, consisting of potatoes and onions. The latter supply was very good and received in fair order.

Lime juice and kokum. Limejuice and kokum were issued as required. The kokum for natives at half an ounce every four days. It was a good anti-scorbutic.

Boxes of medical comforts. Exclusive of large Reserve Stocks of every article in use in hospitals, boxes were received from Bombay containing supplies ready packed to accompany hospitals on the line of march.

Box No. 1 contained.—Brandy, 6 bottles; corkscrew, folding, 1; wine, port, 6 bottles; beef, essence of, $4\frac{1}{3}$ oz. tins, 80; knife for opening tins, 1.

Box No. 2 contained.—Arrowroot, 4 lbs.; candles, wax, 8 lbs.; measures, quart, pint, $\frac{1}{2}$ pint, $\frac{1}{4}$ pint, set 1; mustard 10 oz.; mustard pot, 1; pepper, 32 ozs.; pepper castor, pewter, 1; salt, 5 lbs.; salt cellar, wood, 1; soap, Europe, 1; sugar, 10 lbs.; tea, black, 5 lbs.; vegetables, preserved, mixed, 5 lbs.; matches, waxed, boxes, 5.

The two boxes were a mule load and weighed less than 150 lbs. The above were for European troops.

For Native Hospitals.—The boxes were of the same weight and contained, port wine, 6 bottles; sago, $1\frac{1}{2}$ lbs.; arrowroot, 3 lbs.; arrack, 3 bottles; limejuice, 6 bottles; brandy, 3 bottles; candles, 1 lb.

Forage, &c. The hay received from Bombay was good. It was in screwed bales of 75 and 200 lbs. each. The Calcutta consignments were a description of root grass which was not approved of.

The best hay was received from England, and the English compressed forage was very highly thought of. It contained a large proportion of oats, and being both grass and grain combined is the only article that is worth its carriage any distance. The packages contained 80 lbs., a day's feed for four horses. The first consignment received was packed square, and the covering canvas was too thin and badly sewn. The consignments received later were of the best shape, long and flat, and fitted compactly to the mule saddles. They were also better secured, and there was little or no wastage. They were carried long distances in the highlands, subject to frequent handling, yet these packages were found perfect. The chopped straw from Egypt for mules was very good fodder, as also the barley and beans from the same source.

The gram received from Bombay and Calcutta was very good.

Commissariat establishments. The establishment that accompanied the reconnoitring party, consisted of 3 clerks, 1 overseer, 2 inspectors, 1 weighing-man. On the arrival of the Advance Brigade on the 22nd October, all these were absent with reconnoitring parties to the interior, with the exception of the overseer. Lieutenant Shewell, Sub-Assistant Commissary-General, arrived with the Advanced Brigade, and brought an establishment of 3 conductors, 9 clerks, 13 inspectors, and 11 weighing-men. Lieutenant Shewell was Major Mignon's only assistant from the 23rd October to the 5th and 7th December, when Lieutenant Smith and Captain Hawkes arrived, and these officers then took over Lieutenant Shewell's duties, who went to Senafe to form the important highland depôt there. On the 23rd December, Major Thacker, Major Bardin, Captain Heysham, and Lieutenant Bryant, with further establishments, arrived.

First establishments at depôts. Owing to the non-arrival of the required establishments the inland depôts were not placed on a proper footing for some time. The establishments at the several depôts were at first as follows:—

Hadoda.

1 inspector. | 1 weighing-man. | 1 peon.

Kumayli.

2 inspectors.	1 weighing-man.	3 begarees.

Suru.

2 inspectors.	1 weighing-man.	4 begarees.

Undul Wells.

1 inspector.	1 weighing-man.	3 begarees.

Ruhagedi.

1 inspector.	1 weighing-man.	3 begarees.

Senafé.

1 sergeant.	1 assistant-overseer.	2 weighing-men.	6 begarees.

As officers and subordinate establishments arrived, the following were sent to :— After establishments at depôts.

Hadoda.

1 sergeant. 1 inspector.	1 weighing-man. 1 peon.	5 begarees.

Kumayli.

1 officer. 2 conductors. 1 sergeant. 3 inspectors.	4 weighing-men. 3 begarees. 1 cooper. 2 bheesties.	1 master baker. 15 assistant bakers. 5 baker coolies. 1 fireman.

Suru.

1 conductor.	2 inspectors.	2 weighing-men.	1 begaree.

Undul Wells.

1 sergeant.	1 inspector.	3 weighing men.

Senafé.

2 officers. 6 clerks. 2 shroffs. 8 peons. 2 assistant overseers. 14 inspectors. 7 weighing-men.	6 begarees. 2 carpenters. 2 smiths. 1 cooper. 1 bheestie, puckal. 4 bheesties, hand. 2 mooches.	2 dhobees. 1 tinman. 1 sweeper. 1 master baker. 15 assistant bakers. 5 bakers' coolies.

As Abyssinia was a country on which no reliance could be placed for supplies, all stores were sent either from England, India, or Egypt, and on these countries indents were made as required.

The Bombay Government in their resolution of (No. 40 A) 26th August, 1867, ordered that six months' shore rations for the force should be sent, in addition to the sea

rations placed on board the transports.* Each body of troops also took two months' shore rations with it.

Extra supplies ordered from England.

To supplement, however, the Commissariat stores, which were only slowly arriving by the middle of January from Bombay, the Deputy-Commissary-General of the Force, applied on the 10th January, for the following articles from England by the overland route:—

500,000 lbs. of biscuits, 30,000 gallons of rum, 300,000 lbs. of sugar, 15,000 pairs of English boots, 15,000 English blankets, and 100,000 lbs. of salt pork and beef, all sent out packed for mule transit, the spirit being in iron drums or kegs of 10 gallons each.

Arrangements to provision Senafè.

At the time of the arrival of the Commander-in-Chief, the great Commissariat problem was how to provision Senafè. The break-down in the Transport Train left few animals available for this duty, although the Commissariat stated its ability to find all provisions necessary, if carriage were available. In order to utilize to the utmost extent the number of cattle which the Director of the Land Transport declared himself able to place at the disposal of the Commissariat, a calculation was made as to whether it would be more economical to proceed by a system of through traffic, or by a system

Staging and through system.

of relays from station to station. The difficulty of the problem was much enhanced by the fact that there was neither grass nor grain to be obtained in the Pass, and the transport animals had, in consequence, to carry their own provisions included in their loads.

Staging system ordered.

To facilitate the transport of stores to Senafè, the Commander-in-Chief, on the 13th January, directed that the depôt at Kumayli should be increased, and that the Director of the Transport Train should furnish the Commissariat daily, at Zula, with 400 camels and 382 pack bullocks, which were to be carefully loaded and sent out to Kumayli, from whence another relief of animals was to take the stock on to Suru, another to Undul Wells, another to Rahagedi, and another to Senafè.

Its break down.

This arrangement, however, broke down, as the Land Transport was unable to supply more than 203 mule-loads per day. It was then attempted to provision the highland depôt at Senafè by means of a system of through traffic, but as Senafè was five marches from Zula, each mule could only make three trips per month, and on each occasion had to carry its full forage for the march both there and back, besides which it was necessary, in addition, to feed many sick and lame in the Pass.

It was not anticipated that much grass would be obtainable locally at these stations as the season advanced, hence each camel had to carry 32 lbs. of grain and 40 lbs. of hay from Kumayli, and each mule 40 lbs. of grain and 32 lbs. of forage; draught bullocks, 80 lbs. of grain and 120 lbs. of forage per pair; pack bullocks, 16 lbs. of grain and 32 lbs. of grass each; and horses, 40 lbs. of grain and 48 lbs. of grass each, which made a considerable deduction from the stock to be conveyed to Senafè.

In addition to the above, the outposts between Zula and Senafè had to be provided with food for the troops stationed there and for all followers, Transport Train, and others. To do this and ration the animals took 30 per cent. of the whole carriage, and it was calculated that after feeding the troops, depôts, and animals, only 9,890 mule loads per month were available to form a reserve at Senafè.

By great exertions these difficulties, which threatened to prevent the advance of the Force, were surmounted by the application of cart transport, which was rendered possible

* The desire of the Commander-in-Chief was to start with one month's sea rations for the Force, two months shore rations in the same vessels with the troops, and six months' reserve rations.

early in February by the construction of the road up the Pass. As soon as this was done, regular convoys of carts and fresh animals daily marched from the lowlands for Senafe, and as far as Adigrat. A proposal was submitted at an after date to attempt the staging system again, but for reasons already given no alteration was made, and the through system was worked to the end of the campaign.* Application of cart transport.

To supplement the Transport Corps, officers were sent to purchase camels and Commissariat supplies at Berbera, Hodeida, and other neighbouring ports. Few, however, were obtained at these places. A large number of camels were purchased in Egypt, and Egyptian camel-men were brought to Abyssinia to look after them. Officers sent to Berbera, Hodeida, &c., to purchase supplies.

As the campaign proceeded, it became apparent that the Commissariat Department required a larger staff. Officers and sergeants were attached to it from different regiments, as requirements demanded, until on the 26th February it assumed the following composition, which it retained generally till the conclusion of the campaign. A few officers were, however, afterwards added for the Commissariat camel train.† Final establishment in Abyssinia.

Designation.	No.
Officers	27
Warrant Officers	6
Serjeants	14
Clerks, Inspectors, &c.	171
Peons, Begarees, &c.	131
Porters, Hut Builders, Smiths, Carpenters, &c.	65
Bheestics, Sweepers, Leather Workers, Dhobies, Tinmen, Coopers, Camel Purchasers, Guides, and Interpreters, &c.	63
Bakery Establishment, &c.	273
Total	750

The Deputy Commissary-General remained at Zula; one Assistant Commissary-General was in charge of the department with each division; and one assistant was attached to the office of the Controller of Supply and Transport. Disposition of officers.

Of the other officers of the department thirteen were on duty with the Commissariat depôts along the line of communications at Zula, Kumayli, Suru, Undul Wells, Senafe, Adigrat, Antalo, and the advanced depôts. Two officers were retained on special duty in Egypt. One officer was on special duty in the ports of the Red Sea collecting supplies. One officer was in charge of the elephants; one was in charge of the Bengal Kahar Corps;‡ and one of the Commissariat pier. The remainder were attached to the different detachments of the advanced Force. The warrant officers were attached to depôts as required, and to the movable columns.

The Deputy Commissary-General, on the 14th April, suggested that a special Transport Train for Commissariat purposes should be formed of 1,000 Egyptian camels. This was sanctioned by the Commander-in-Chief; and the following statement shows its composition, cost, and the comparative cost of its establishment with that of 1,000 camels in the Land Transport. Organization of Commissariat Division of Transport Train.

* See page 402, chapter XI.

† For complete list of officers, see page 186.

‡ For details regarding Bengal Kahar, or Coolie Corps, see chapter XXXVII.

Comparative statement of its cost, with the cost of a Land Transport division.

Rank.	Scale of the Cost of Commissariat Attendance for 1,000 Camels.			Scale of the Cost of Attendance of 1,000 Camels in the Transport Corps.			Difference.
	No.	Rate of Pay Per Month.	Cost.	No.	Rate of Pay Per Month.	Cost.	
			R. A. P.			R. A. P.	R. A. P.
Head Overseer	1	150	150 0 0	..	..	..	..
„ Interpreter	3	200	600 0 0	..	..	..	..
Second „	3	100	300 0 0	..	..	..	..
Head Inspectors	3	230	360 0 0	2	120	240 0 0	..
Second „	..	..	..	2	80	160 0 0	..
Third „	..	..	..	5	40	200 0 0	..
Head Muccadum	..	..	..	10	20	200 0 0	..
Second „	..	..	..	40	12	480 0 0	..
Camel Drivers	333	22½	7,292 8 0	333	15	4,995 0 0	..
Sheiks „	47	30	1,410 0 0	..	..	..	..
Weighing Man	..	..	..	1	30	30 0 0	..
Weighing Coolies	..	..	..	2	10	20 0 0	..
Total	..	..	10,112 8 0	..	..	6,325 0 0	3,787 8 0

General working of the Commissariat Department.

The general working of the Commissariat Department was so interwoven and connected with the operations of the Force, rations decreasing as the Force advanced, till for some weeks all had the simplest fare to subsist on (meat and flour, only), and increasing again as the Force returned, that constant reference to the detailed arrangements of the Department will be found in the preceding chapters describing the movements of the Force. The following notes, extracted from various orders, will show the principal arrangements and changes connected with the working of this Department prior to the departure of the Force and in Abyssinia.

The description of rations issued on board ship is given in detail in Chapter VII.*

Rations to wives and children of soldiers.

The Government of India in Resolution No. 72 of the 6th January, 1868, decided that three-quarters and half rations might be granted to the wives and children respectively of the British troops sent from India to Abyssinia instead of half and quarter rations as in ordinary cases.

Issue of cocoa, sugar, and biscuit.

The Bombay Government in Resolution of 1st November, 1867, decided that, in addition to the ordinary rations, a pint of cocoa, with an ounce of sugar and a quarter of a pound of biscuit, should be issued to each man of the British troops proceeding to Abyssinia. The cocoa was obtained from India and England.

Tobacco.

The Bombay Government further sanctioned a supply of tobacco for 4,500 British soldiers to be issued at the port of debarcation at cost price. A quantity of preserved milk was sent out from England on the recommendation of the Medical Department.

Preserved milk.

Cocoa-nut nib.

Two thousand pounds of cocoa-nut nib were sent from Bombay for retail to officers at cost price.

Followers and fighting men to have the same rations.

It was resolved (4438, 18th November, 1867), on the recommendation of the Inspector-General, Indian Medical Department, that followers should have the same rations as fighting men.

* Pages 212 to 216.

Hay, kurbee (stalks of jowarree), and firewood were sent from England,* Egypt, and India to Abyssinia, as none of these were supposed to be procurable in that country. Hay, kurbee, and firewood.

The Government of Bombay resolved (6th September, 1867) that kokum† and curry stuff should be issued to Native troops in Abyssinia. Kokum and curry stuff.

It was decided (23rd November) that Parsee clerks, inspectors, &c., and Chinese carpenters in Abyssinia, should be rationed on the European scale, with the exception of spirits. The free issue of warm clothing was issued to all office establishments and public followers; they were also allowed to obtain rations on payment, but afterwards were granted them gratis. Parsee and Chinese rations.

The first alteration in the ration was in the meat, which was increased on the 11th January, 1868. from 1 lb. to 1½ lbs., on the recommendation of the Inspector-General of Hospitals, the allowance of 1 lb. of meat being insufficient; for when cooked and deprived of bone, the actual quantity of animal food remaining did not average more than 9 ounces, and the soldier, having hard work to perform, and being unable to supplement his meal from other sources, the Inspector-General was of opinion that 1½ lb. of meat, of the quality issued to the Force, was necessary to maintain him in a state of health and efficiency. Alterations in rations in Abyssinia. Meat.

With respect to the recoveries for rations, the following Order was issued on the 11th January, 1868:— Recoveries for rations.

"The Military Paymaster, Abyssinian Expeditionary Force, will be good enough to "recover from all officers drawing pay in Abyssinia, the cost of rations issued to them, "their servants, and horses, by the Commissariat, as under:—

"European rations	8 annas per day each.
"Native private followers' rations ..	1 anna 4 pie each.
"Horses	12 annas per ration.

"The Commissariat will furnish the Military Paymaster with a nominal roll, showing "the dates on which each officer commenced drawing rations.

"Officers, on preparing their pay abstracts, to certify on honour, on the back "thereof, the number of servants and horses for whom they have drawn provision and "forage during the month, deducting, on the face of the abstract, the cost of the same "at the rates shown.

"*Form of Certificate.*

"'I do certify on honour, that during the month for which pay is drawn in this "'abstract, I have received rations from the Commissariat for myself (one or six servants, "'as the case may be), and for horses.'" Form of certificate.

"In the case of regimental officers, their names will be included in a general roll to "be submitted by the Regimental Paymaster to the Military Paymaster.

"In all cases of officers leaving Abyssinia, an entry to be made in their pay certificate, "that they have paid for all rations drawn for themselves, their servants, and horses, to "date of departure.

"Gentlemen unconnected with the Service, drawing rations from the Commissariat, "are required to pay monthly in advance.

"Officers drawing arrack or spirit rations to prepare requisitions twice a month for "this supply, at the rate of two drams per diem, under proof, at 5 rupees per gallon of Spirit rations.

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* Jowarree.—Holcus Saccharatus.

† Kokum.—An oil extracted from the Mangosteen fruit.

"40 drams. Spirits will only be issued by the Commissariat on ready money payment."

Similar rations to all native troops and all followers.

On the 13th January, a General Order was issued with regard to the rations for the native troops and followers, which placed all from Bombay, Bengal, and Madras on an equal footing:—

On the 16th January, on account of the scarcity of rice, &c., the scale of rations was altered as follows:—

Reduction of rations 16th January.

"*European Rations.*—The daily allowance of 4 ozs. of rice to cease; the men to be "permitted, in lieu, to draw money compensation for this article.

"*Native Rations.*—The rice and flour ration of fighting men to be reduced to 12 ozs. "of each per man per diem; ½ lb. of mutton, or money compensation in lieu, at the "option of the soldier, being given for the difference.

"*Public and Private Followers* will draw 10 ozs. of flour and 10 ozs. of rice per diem, "and ¼ lb. of mutton or goat in lieu of the balance.

"Other articles of ration to stand as before; and in the case of public followers, "money compensation, if desired, in lieu of the balance of rice and flour, will be allowed.

"Officers' horses only to receive 6 lbs. in place of 8 lbs. of grain per diem."

The public followers of the Land Transport were however, afterwards, by a General Order dated 1st February, allowed to draw the full ration of flour and rice, in lieu of the portion of meat ration ordered above.

Issue of spirits to clerks and public followers.

On the 16th January, the issue of spirits was authorized to all clerks and public followers drawing European rations (excepting Parsees and Chinese) at 2 rupees 8 annas per gallon of 40 drams, 24 degrees under London proof; but it was afterwards found necessary to restrict the issue of spirits south of Kumayli to fighting men only, after arrival in the highlands; the rations of sugar and tobacco could not always be supplied on account of the difficulty of transport, and the supply of meat was also sometimes scarce.

The out-turn of the sheep in Abyssinia was very small. The Commissariat Officer at Adigrat, reported on the 7th February, that the day preceding, 8 issued weighed only 81 lbs., and 9 others only 108 lbs.

Reduction of rations, 18th January.

The Native rations issued at this time were as follows, on an Order dated 18th January:—

Native Fighting Men.	Ozs.	*Public and Private Followers.*	Ozs.
Flour	12	Flour	10
Rice	12	Rice	10
Dholl	4	Dholl	4
Ghee	2	Ghee	1
Meat	8	Meat	4
Salt	½	Salt	½
Turmeric	½		
Pepper	½		

The rations for animals were:—

Horses.—6 lbs. grain and 12 lbs. hay.

Mules.—4 lbs. grain and 10 lbs. hay, or 3 lbs. grain and 12 lbs. hay.

Bullocks.—4 lbs. grain and 10 lbs. hay, or 2 lbs. grain and 12 lbs. hay.

When grain was scarce, a proportionate reduction had to be made; and when a halt of 48 hours was made, half allowance of grain, and no forage was issued.

Bi-weekly returns.

On the 12th February, it was ordered that bi-weekly returns of provisions in hand at Zula, or on board ships anchored in Annesley Bay, and daily similar returns from any other stations, were to be sent by officers in charge of Commissariat depôts, direct to the Deputy Adjutant-General of the Force. This order was duly carried into effect, and Sir Robert Napier was thus kept aware of the number and description of rations at all stations; and instructions were from time to time sent, as required, to the Commissariat officers in charge of depôts to send to the front such articles as were in demand. By this means reserve stocks were duly kept up at Antalo and other advanced stations.

Towards the middle of February it became necessary to reduce the ration again; and as the spirit kegs were some of the most difficult articles to transport, and could not be carried by the pack bullocks of the country, which were now brought into use to push up nearly all other supplies, the following Order was issued on the 12th February:—

Spirit ration reduced to one dram.

"The daily ration of spirits issued to fighting men will be reduced in future to one "dram.

"In publishing this Order, the Commander-in-Chief wishes it to be made known to "the troops under his command, that it is with the greatest reluctance he feels himself "compelled to deprive them of any part of their rations.

"The difficulties, however, in providing for the numerous wants of an Army in a "country almost destitute of supplies renders it imperative that the essential articles of "food, such as biscuit, flour, and rice, should be sent to the front in preference to all "others, which must be looked on in the light of luxuries when troops are in the field.

"The Commander-in-Chief has remarked with pride the fine spirit shown by all "ranks of the Army since its arrival in this country; and he feels assured that whatever "further privations may have to be endured, in order to insure the success of the Expe-"dition, one and all will cheerfully submit to them."

At Agula, on the 27th of February, the following scale was laid down for the troops and followers which advanced beyond Antalo:—

Scale of rations south of Antalo, 27 February.

European Troops.		Native Troops.		Followers.	
	ozs.		ozs.		ozs.
Flour	16	Flour	14	Flour	12
Meat	24	Ghee	2	Ghee	2
Salt	⅔	Salt	⅔	Salt	⅔
Ghee*	2	Meat	16	Meat	16
Vegetables	2	Kokum	½		
Tea	⅓	..		..	
Sugar	1½	..		..	

The rations for the few Native fighting men who could not eat meat were—flour, 16 ozs.; rice, 8 ozs.; ghee, 4 ozs.; salt, ⅔ oz.; and kokum, ½ oz.

Scale of* rations at Lat.

On the advance of the Army without baggage beyond Lat, the Commissariat supplied rations only to Staff officers and departmental followers. Fifteen days' rations, according to the following scale, were carried by corps, and issued regimentally:—

* It was assumed that ghee (clarified butter) would be obtainable in Abyssinia.

Europeans.	*Natives.*
Biscuit or flour, 1 lb.	Flour, 1 lb.
Vegetables, 2 oz.	Ghee (if obtainable), 2 oz.
Salt ½ „	Salt, ½ oz.
Sugar 1½ „	Vegetables (once a week), 2 oz.
Tea ½ „	
Rum, 1 dram.	

This arrangement was extended to all highland stations as announced in the following memorandum.

All troops provided with fifteen days' rations.

"In future all regiments and detachments leaving Senafè or other highland stations "for the front will be provided with rations for fifteen days, to be received into regimental "charge, and issued agreeably to scale under regimental arrangements. The Commissariat "limiting its operations to the supply of medical comforts, the purchase and supply of "slaughter cattle, grass, grain, wood, and any other article such as ghee, flour, bread, &c., "which may be procurable locally. The last-mentioned articles must be received and "issued whenever tendered by the Commissariat; the similar ration articles in regimental "charge being kept intact so far as such local issues will admit. All empty bags, &c., "must be carefully preserved and returned to the Commissariat.

"The Transport Train mules attached to regiments, &c., that become unloaded as "rations are consumed, must be delivered over day by day to the officers in charge of the "Transport Train, who will place them at the disposal of the Commissariat officer for the "carriage of local purchases made over and above that which is required for daily use."

Final reduction of rations.

The fifteen days' supplies were expended early in April, and for some time the rations for all troops and followers had to be reduced to 1 lb. of meat, 8 ounces of flour, and such salt as was procurable in the country. The privation which the troops had to undergo in this stinted allowance, together with exposure and fatigue, told so heavily upon them that a scorbutic tendency manifested itself, which called forth from the Medical Principal Officer on the 21st April the following letter:—

Sickness on account of reduced rations.

"I have the honour to bring to the notice of his Excellency the Commander-in-Chief "the number of sick in the Force, chiefly from bowel complaints.

"I am of opinion that this is partly to be ascribed to the monotonous diet, to which "the soldiers have been restricted for some weeks past.

"The want of such necessary articles as rum, sugar, and vegetables is telling sensibly "upon the health of the troops. I beg, therefore, to recommend that every effort be "made to obtain a supply of the above, with as little delay as possible, and that, further, "one ounce of limejuice be issued daily per man, and the present allowance of salt be "increased from half an ounce."

Limejuice recommended.

While the Army was in front of Magdāla, and south of the Takkazze, limejuice could hardly be obtained, but when the Takkazze was regained it was issued, and a ration of spirits and vegetables was also obtained. South of the Takkazze, forage and grain were very scarce, and the troops had to endure many privations. The beef procured from the country was very poor, tough, and hard, and mutton could not be frequently obtained, as the country people were unwilling to part with their sheep. After leaving Magdāla on the return march the ration of beef was increased to 2 lbs., and Abyssinian flour, a mixture of wheat, barley, and bajree, was frequently issued. Gogo, or native bread,

made of this flour, was also largely used by the troops, but was reported by the medical officers as insufficiently baked and very indigestible.

Paucity of supplies in Abyssinia.

The portion of Abyssinia through which the Army marched was wretchedly poor, and produced no vegetables, and very little grain or grass in comparison with the requirements of the Force. Eggs, fowls, butter-milk, and honey were occasionally procurable in small quantities, but not sufficient for issue to the troops.

The Commissariat had for some time been unable to supply officers with the regulated rations for their horses, the price charged was consequently reduced, as shown in this Memorandum, dated Camp before Magdāla, 15th April, 1868:—

Recoveries for horse rations reduced to eight annas per diem for each horse.

"Government regulations having laid down a certain scale of rations for horses, and "circumstances having rendered it impossible to supply the proper quantity, the Com- "mander-in-Chief is pleased, with reference to G. O. C. No. XVII of the 11th January "last, and subject to confirmation of Government, to order that the rate chargeable to "officers for rations supplied for their horses shall be eight annas per diem per horse, from "15th April, 1868, pending sanction for further retrospective effect.

The following extract from a Report, dated the 10th June, by Major Mignon, the Senior Commissariat Officer with the advanced Force, shows the working of the Commissariat on the highlands:—

Major Mignon's Report on the Commissariat Department on the highlands.

"From Senafè to Magdāla the Commissariat established and maintained in good "working and efficient order large depôts at Adigrat, Agula, Antalo, Atsala, "Ashangi, Lat, Dildi, Takkazze, Sindi, south edge of the Talanta Plain, bed of the "Bashilo.

"At each of these troops have been posted and provisioned, and far more than the "ordinary victualling duties of a camp performed; for at all, without exception, large "supplies had not only to be received but to be forwarded with regularity and despatch "to the front; at all, had the resources of the country to be opened out, extensive "purchases to be effected and arrangements to be made for the feeding from local "sources, of large numbers of Transport Train animals passing and re-passing.

Depôts.

"These depôts again were supplemented by others at Gunaguna, Fokada, Mai "Wahiz, Adabaga, Dongolo, Dolo, Eikkullet, Masgah, Mashik, Bulago, Makan, "Mussagita, Marawah, Wundatch, Santara, Gahso, Abdikum, north edge of Talanta "Plain. These, under arrangements, I had the honour to propose to his Excellency at "Adigrat, were worked by the non-commissioned officers of Cavalry commanding the "outposts, and at each of these depôts large supplies of grain, grass, wood, and cattle "were purchased, which enabled the Force as it moved forward,—mounted corps, convoys, "and Transport Train,—to receive grain and forage as they passed along our line of com- "munication. Thus from Senafè to Magdāla no less than 11 main depôts were organized "and maintained by Commissariat establishments, and 18 subordinate depôts worked "by the Army.

"These depôts have been a peculiar feature of the campaign. They entailed very "heavy work and responsibility on the officers and subordinates employed, the more so as "their numbers were so small; and to succeed at all, constant personal exposure and unre- "mitting strenuous labour and exertion were necessary from the first to the last. The "difficulty of obtaining supplies, the difficulty of purchasing even those offered for sale, "the entire absence of any trading class, the entire absence of any standard of measure, "the necessity for the constant daily, nay hourly, exercise of patience, of discretion, of

"tact, of forethought, are matters *too* well known to his Excellency to require further "notice from me.

Native carriage.

"Through arrangements made by the political authorities at Senafè on the 29th "January, a system of forwarding Commissariat stores to the front by employing native "carriage was introduced. These arrangements were continued from depôt to depôt, and "perfected and matured by the temper and judgment exercised by the several Commissa- "riat officers on the highlands.

"Through the agency of this carriage alone were we enabled to forward ample "supplies as far as Atsala. It is true the arrangement failed beyond Atsala, and at "Ashangi and Lat, owing to disputes and jealousies amongst the natives and their fear "of the Galla tribes; in time, however, these difficulties would doubtless have been over- "come, but the speedy and successful termination of the campaign rendered it unnecessary "to forward to the front any large proportion of the stores which had accumulated at "those places.

"That this system has done us much good, that it benefited the people, that with the "establishment of the depôts the entire resources of the country were placed at our "disposal, cannot for one moment be disallowed. Our exactness in business matters, our "moderation, our kindness, our just and generous treatment of the natives, bore their "fruit when, on our return from Magdāla, we found all our depôts well supplied, when at "even the poorest places, with a few exceptions, the large mass of our Cavalry and our "Transport received full rations of grain and grass.

Reduction of rations.

"The break-down of the native carriage necessitated a reduction in the scale of "rations; instead of 1 lb. of flour to European soldiers, 14 oz. to Native soldiers, and "12 oz. to followers, the allowance was reduced to 12, 10, and 8 oz. respectively, but the "meat ration was increased to 2 lbs. per man. This rate continued from the 30th March "to the 8th April; for the 9th, 10th, and 11th April followers received 1 lb. of country "bread, or 2 lbs. wheat, and Native soldiers 12 oz. wheat, in addition to 8 oz. of flour. "On the 10th of April, on advancing from the Bashilo, every man received 2 lbs. biscuit "or flour. On the 12th, 13th, and 14th April, European soldiers received 1 lb. of biscuit "or flour, and Natives 12 oz. flour, the 2 lbs. of meat being continued the whole time. "From the 15th to the 17th the scale was the same as before the break-down of the "native carriage; and after that date the usual scale was adhered to, and extra articles in "extra quantities supplied, the scale varying almost daily as we passed through our depôts "on the return march; and, had circumstances compelled a halt before Magdāla, large "supplies would have reached us in a few days from Ashangi, from Lat, from the "Takkaze, from Sindi, and from Talanta Plain, where I had left a portion of my stores "in reserve. At Magdāla itself every arrangement was made for the supply of the troops; "ample provisions and live stock followed immediately in rear of the columns, and after "the assault rum, was served out to every man.

"The difficulty of forwarding supplies was recognised at a very early period, and "before the force left Antalo it had been determined that only the bare necessaries of life "should be forwarded. I remained a week at Antalo to mature the native carriage, and I "succeeded in forwarding to Atsala, not simply necessaries, but every article that formed "part of the soldiers' ration and other supplies. The entire population of the neighbour- "hood tried to become our carriers, and in five days supplies had left Antalo sufficient to "last the entire force for two months, and this entirely exclusive of the large balances at "Senafè, at Adigrat, and *en route* between those places to the front. I allude to this "subject to show the arrangements that had been made, and that the Army would never "have been without a single article of ration had the Department not necessarily been

"dependent upon a means of transport which, valuable as it proved, still was independent "in its working, and subject to no control."

List of all Commissariat stores sent to Abyssinia from England and Calcutta will be found in Chapters IV and VI,*† and the following Report, from the Deputy Commissary-General, dated the 9th of May, shows the manner in which the surplus Commissariat stores were being on that date disposed of:—

Lieutenant Colonel Lucas' Report on the Commissariat Department.

"All surplus Commissariat stock, as well as that of other departments, has already, as "far as practicable, been shipped, and some 13 vessels arrived lately from Bombay, the "cargoes of which have not been broached, are ready for despatch, but pending the arrival "of a good portion of the Army at Zula, I do not think it would be safe to send the "whole of these away.

"Of the surplus grain, forage, provisions, &c., some 12,000 bales hay (two ship "loads) and a proportionate quantity of grain, together with other articles of provision "stock, will be made over to the Executive Commissariat officer at Aden.

"The whole of the vessels for conveyance of Cavalry to India have been provisioned "with grain and forage, and the water has also been shipped.

"The approach of the monsoon has prevented my withdrawing all surplus provi- "sions from the highlands, as I should otherwise have done. The Pass may be closed for "some days at any moment, and in which case the feeding of the Army must be provided "for; hence it is not safe to withdraw our provision stock until the greater part of the "Army has marched down the Passes.

"The necessity of the above may cause the loss of surplus provisions at Senafé, "but this is, I submit, a matter of secondary importance when the efficiency and safety of "the Army depends upon a liberal quantity of supplies being always available on the "highlands for their use.

Officers.

"On the completion of the embarcation of the main body of the Army the "regimental officers acting in the Commissariat will be returned to their regiments, and "the Field Commissariat will be returned to India, with the exception of two or three "officers and the necessary establishment to complete the embarcation of stores, &c., and "whom I shall hereafter detail and furnish a report of to you in due course.

"I am led to believe that 500 of the Egyptian camels will only be taken back to "India, the remainder of the available tonnage for animals will be made use of for convey- "ance of mules and such draft bullocks of the Transport Train as may be found effective "and fit for return passage.

Rains.

"The rains have commenced, and a portion of the Suru Pass road has been washed "away, and which for a few days has stopped traffic; the Sappers with working parties are "at work, however, and I trust the road will be re-opened for pack animals by to-morrow.

Storm.

"Yesterday a very heavy storm burst over Zula, during which half the camp "came down. Many boats were wrecked and broken up, and the provisions under ship- "ment on board the "Camperdown" and "Sam. Cairns" were more or less damaged, and "225 of the Commissariat sheep were killed in the storm, the temporary cover to protect "them from the fierce rays of the sun was blown down, and injured or killed some, the "remainder, having gone to be watered, were killed by the hail and general effects of "the storm.

Mortality among sheep.

"I may here mention that the mortality amongst the sheep is very heavy. During

* NOTE—Lists of Commissariat Stores sent from Bombay and Kurrachee will be found at page 189.

† Pages 71 and 200.

"two very hot days last month, 93 were killed by the sun, having, by frequent personal "inspection, and from the great attention paid by the officer in charge of the slaughter "animals, satisfied myself that all the losses proceeded from circumstances beyond "the control of the Commissariat; I have sanctioned the writing off of these casualties "accordingly.

"The mischief done by the storm, when its violence is considered, is comparatively "small, and it will not, I think, in any way retard the embarkation of the troops; the "damaged provisions under shipment are being replaced, and it is anticipated the whole "will be completed by to-night."

Disposal of surplus stores.

A large amount of Commissariat stock was handed over to Prince Kassai, as noted in Chapter XXI.* and supplies being needed at Aden, the following quantity of Stores was taken over by the Aden Commissariat.

For executive use.		*To be sold.*	
Grain,	200,000 lbs.	Ghee,	12,000 maunds.
Hay pressed,	15,000 bales.	Rice,	10,000 bags.
Dholl,	33,000 lbs.	Dholl,	5,000 lbs.
Ghee,	13,000 „	Sugar,	1,000 bags.
Salt,	1,000 „	Wheat,	1,000 „ of 168 lbs. each.
Sugar,	1,100 „		
Rice,	150,000 „		

The Commissariat Officers nominated to do duty with the Force on its organization have been shown in Chapter VI.† The following is a list of Officers serving in the Department at the conclusion of the operation :—

Rank and Name.	Corps.	Departmental Rank.	Where Employed.
Lieut.-Col. A. W. Lucas	Bombay Staff Corps	Deputy Commissary-General	Zula.
Major F. P. Mignon	Ditto	Assistant Commissary-General, 1st Class	1st Division.
Major G. R. F. Bardin	Madras Staff Corps	Ditto	2nd Brigade, 1st Division.
Major J. Leven	Bengal Staff Corps	Assistant Commissary-General, 2nd Class	Antalo depôt.
Captain M. W. Willoughby.	Bombay Staff Corps	Ditto	Assistant to the Controller of Supply and Transport, Zula.
Captain H. P. Hawkes	Madras Staff Corps	Ditto	Zula depôt.
Major B. F. Heysham	Ditto	Deputy Assistant Commissary-General, 1st Class	Ditto.
Major W. Stansfield	Ditto	Ditto	Egypt.
Major John Thacker	Bombay Staff Corps	Ditto	Senafé depôt.
Captain W. R. Burlton	Bengal Staff Corps	Deputy Assistant Commissary-General, 2nd Class	Zula depôt.
Lieutenant W. F. Keays	Bombay Staff Corps	Ditto	Ditto.
Lieutenant A. M. Shewell	Bombay Staff Corps	Sub-Assistant Commissary-General, 1st Class	With the advanced force.
Lieutenant G. F. Bryant	Ditto	Ditto	Zula depôt.
Lieutenant W. O. Smith	Bengal Staff Corps	Ditto	Charge of Bengal Kahars, Zula.

* See Page 96.

† See Page 183.

Rank and Name.	Corps.	Departmental Rank.	Where Employed.
Lieutenant C. B. Smith ..	Madras Infantry ..	Sub-Assistant Commissary-General, 1st Class	Charge of Madras dhooley bearers. Advanced force.
Lieutenant Luckhardt ..	109th Foot	Ditto	Egypt.
Lieutenant S. Hunt ..	Madras Staff Corps ..	Ditto	Ditto.
Major B. G. Vandergucht ..	Bengal Staff Corps ..	Ditto	Kumayli depôt.
Major F. J. Ellis	Ditto	Ditto	Senafé depôt.
Captain R. W. Burton ..	Ditto	Ditto	Undul wells depôt.
Captain J. Stevenson ..	Ditto	Ditto	Suru depôt.
Lieutenant W. E. Begbie ..	General List	Ditto	Zula depôt.
Lieut. M. A. Rowlandson ..	41st Regiment, N.I. ..	Ditto	Ditto.
Lieut. J. W. Ouchterlony ..	Late Madras Fusileers.	Ditto	Charge of elephants. Advanced force.
Captain R. J. Callwell ..	45th Regiment ..	Ditto	Atsala depôt.
Lieutenant W. S. Hore ..	General List	Ditto	Ashangi depôt.
Captain H. W. Newport ..	18th Regiment ..	Ditto	Adigrat depôt.
Lieut. D. W. Mackinnon ..	109th Regiment, attached 26th Regt., N.I.	Ditto	Charge of Commissariat camels.
Lieut. John Humprey ..	45th Regiment ..	Ditto	Charge of ditto.
Lieut. E. J. Gunthorpe ..	Madras General List, attached 2nd Grenadiers..	Ditto	Egypt.
Ensign J. C. Scott	1st Batt. King's Own Regiment	Ditto	Kumayli depôt.

Bazaars.

As soon as possible after the arrival of the Force, a bazaar was established at Zula, and afterwards at Senafé and some other stations. These bazaars were established on the general principles prevailing in Indian military cantonments. Officers were appointed as superintendents, and the following were the regulations issued to prevent drunkenness :— Bazaar regulations.

"1. All licensed dealers are permitted to sell by retail (to be drunk on the premises), "ale, wine, and spirits, to any one who does not belong to the European regiments or bat-"teries, to the Naval Brigade, or to the ships in the harbour.

"2. All wines, &c., drunk on the premises, should be paid for on the spot, as no "complaints for non-payment will be entertained.

"3. No wine, spirits, or beer can be taken out of the Bazaar, either on board ship or "for transport inland, without a pass countersigned by the Superintendent of Bazaars.

"4. Officers and others requiring wine, spirits, or beer from the Bazaar, can obtain "stamped passes on application at the Bazaar Office; but it is particularly requested that "all passes may either be returned to the Bazaar Office or destroyed when no longer "required.

"5. No ale, wine, or spirits, unless drunk on the premises, are to be sold without a "stamped pass, signed by the Superintendent of Bazaars.

"6. Any man in the Bazaar found with country liquor in his possession will be "flogged and turned out of camp, in addition to any other penalty that may be "awarded.

"7. No shops to be opened before six o'clock in the morning, or after gun-fire in "the evening.

"8. Dealers and owners of stores will be held responsible for good order on their "premises. No excuse whatever will be received, and the police have orders to enter any "house at any hour if they have reason for supposing that the Bazaar regulations are "being infringed.

"9. All dealers in wine, beer, and spirits are required to keep one sample bottle of "every liquor they sell on a table in their stores, where it can be seen by the police.

"10. Any one giving information to the police, of the violation of these rules or any "other irregularities, will be rewarded. The strictest punishments will be enforced after "the publication of these rules."

The Superintendents of Bazaars were invested with the powers of Provost Marshals, and the following report from Major R. M. Bonnor, the principal Superintendent of Bazaars, shows how the Bazaar System worked with the Force:—

Major Bonnor's report on the Bazaar system.

"It now becomes my duty to report to you the working of the Bazaar Establish- "ment in Abyssinia since the arrival of the Force in the country.

"The largest and the most important is the Zula Bazaar, which prior to the termi- "nation of the campaign rapidly grew into a town. Almost everything was procurable "here, the wants of the large fleet in the bay have been supplied, and the necessaries Zula Bazaar. "of life have been obtained at prices generally lower than those prevailing in Bombay, "and I hope that as it has been of the greatest assistance to the Force, that it has also "been a relief to the Commissariat Department.

"With the large number of sailors, the Europeans employed on the railway, and other "Departments, and the very mixed population, a large number of whom were composed "of the lowest classes from Egypt and the Mediteranean seaports, there has been a "good deal of magisterial and police work, but there have been no serious crimes, the "principal offences being cases of theft. The police that have been employed here have "been found sufficient to protect the residents and to maintain order.

Kumayli and Senafè bazaars.

"The other Bazaars have been formed at Kumayli and Senafè. About 70 shops "have been opened at Kumayli, which from being the head-quarters of the Transport "Train has been a place of considerable importance during the last three months.

"Owing to the difficulty in procuring carriage there was some delay in getting "shops up to Senafè, but about 20 have been established there, which would have proved "of immense benefit to the Commissariat had a force been detained there for the "rains.

"The Kumayli Bazaar was established on the 15th of February, after which I "proceeded to Senafè and was employed in collecting grass and forage at Guna-guna, "when I was ordered to the front by double marches. On arrival at Ashangi I received "an order from His Excellency the Commander-in-Chief to return to Antalo, where I "discharged the duties of Provost-Marshal and received charge of the Conservancy "Establishment there. On Major Sheppard's departure to Bombay, I returned here and "resumed charge of the office at Zula.

Bazaars self-supporting.

"I am glad to be able to report that the whole of the Bazaars that have been "established here have been self-supporting, and that the expense of maintaining the "police and establishments have entailed no cost upon Government."

The following are lists of Commissariat Stores sent from Bombay and Kurrachee to Zula:—

STATEMENT of Provisions, Medical Comforts, Dead Stock, &c., shipped at Bombay.*

Name of Stores.	No. or Quantity.
Provisions for Europeans.	
Biscuit, 1st sort	655,053 lbs.
Beef, salted	252 tierces. 136 barrels. 22,604 lbs.
Pork, salted	255 tierces, 36 barrels. 16,697 lbs.
Rice, Vergole, 1st sort	382,297 „
Spirit, proof	14,374 galls. 15 drs.
Sugar, Bengal, 2nd sort	337,481 lbs.
Tea, black, 1st sort	85,101 „ 15 ozs.
Flour, 1st sort	651,182 „ 2 „
Mustard seed	2,087 „ 12 „
Onions	60,522 „ 12 „
Potatoes, fresh	135,617 „ 4 „
„ preserved	16,185 „ 4 „
Peas or dhall	34,465 „ 8 „
Raisins	11,004 „ 8 „
Vinegar, country	10,921½ pints.
Porter	1,728⅜ hogsheads. 2,047 doz. bottles.
Preserved meat (soup & bouilli)	63,593 lbs.
Wood	2,970,814 „
Flour, American	83,200 „
Mustard, European	105 „ 2 ozs.
Rice, Jeerasal	592 „
Chocolate	24,816 „
Hops	80 „
Rum	26,588 galls. 7 drs.
Salt, 2nd sort	6,512 lbs. 8 ozs.
Provisions for Natives.	
Dhall, Broach, 2nd sort	2,612,163 lbs.
Dates	149,900 „
Ghee, Kurrachee, 1st sort	1,104,155 „ 15 ozs.
Gram, parched	617,434 „ 10 „
Flour, 2nd sort	4,156,007 „ 8 „
Powa	447,727 „
Rice, Bengal, 1st sort	8,761,578 „ 8 „
Salt, 2nd sort	748,961 „ 5 „
Sugar, Bengal, 2nd sort	834,585 „ 2 „
Wood, fire	2,000,510 „
Suran	4,652 „
Potatoes	5,852 „
Onions	2,776 „
Chillies	12,802 „
Cocum	47,099 „
Coriander seed	36,332 „
Turmeric	50,104 „
Beetle nut	840 „
Cummin seed	105 „
Jowaree	365,250 „

Name of Stores.	No. or Quantity.
Wheat, Hunsia	486,075 lbs.
Garlic	477 „
Fish, salt	18,748 „
Tamarind	3,340 „
Paun leaves	89,000 „
Jageree	289,025 „
Tobacco	43,738 „
Barley, country	390,150 „
Wheat	387,870 „
Pepper, black	107 „
Seeds.	
Littac, 2nd sort	1 lb.
Long orange carrot	1 „
Hollow-crowned parsnip	1 „
Musselbarghlick Savoy	1 „
Musselbarghlick	½ „
Green curlet barcole	½ „
Flanders spinach	1 „
Egg plant	½ „
Drumhead cabbage	1 „
Canterbury French beans	4 „
Batavian endive	½ „
Cabbage	4 „
Onion	10 „
Cauliflower	2 „
Pumpkin (red)	5 „
„ (white)	5 „
French beans	8 „
Myatli's parsley	1 „
Neapolitan peas	5 „
Princess Royal peas	5 „
Pineapple	1 „
Radishes, 2nd sort	1 „
Red tomato	½ „
Stock wood cucumber	½ „
Vetches, red, turnip	1 „
Walcheren broccoli	½ „
White celery	½ „
Nolkohl	1 „
Cauliflower, 2nd sort	1 „
Medical Comforts.	
Arrowroot	6,607 lbs. 10 ozs.
Arrack	466 galls. 33 drs.
Bandage cloth	3,689 yards.
Barley, European	5,021 lbs.
Brandy	582 dozen bottles. 11 single bottles.
Lime juice	6,051 galls. 37 drs. 259 7/12 dozen bottles.
Sherry	79 1/12 „ „
Port	1,032 2/12 „ „
Port, in pint bottles	156 „ „

* The names and quantities of stores in this Return, have been given, as received from the Commissary-General, Bombay, in a statement, dated 27th October, 1869.

Name of Stores.	No. or Quantity.
Sago	3,236 lbs.
Sugar, 1st sort	19,771 „
Candles, wax	4,876 „ 8 ozs.
Essence of beef, ¼ lb. tins	16,559 tins.
Rum, in bottles	204 bottles.
Ale, in quart bottles	928 1/12 dozen bottles.
Coffee, raw	2,337 lbs.
Mustard, European	148 „
Pepper, black	230 „
Milk, dessicated	718 „
Salt, 1st sort	1,189 „
Vegetables, preserved	2,240 „
Camphor	335 „
Crest	288 „ 2 ozs.
Honey	52 bottles. 11½ lbs.
Lime pickle	3,550 „
Vinegar, European	1,675 galls 33 drs.
Snuff	28 lbs.
Nutmegs	2,250 „
Beer, in pint bottles	30 dozen.
Mustard, country	152 lbs.
Acid, nitric	52 bottles. 13 lbs.
Cantharides	52 „
Calomel	19 „ 4 ozs.
Decamallee	120 „
Ginger, dry	6,821 „ 1 oz.
Medical Dead Stock.	
Sulphur	754 lbs.
Oil, common or sweet	267 „
Poppy heads	1,481 „ 14 ozs.
Wax, bees'	1,027 „ 12 „.
Soap, country	197 „
Beds, for hammocks	120
Pillows, for ditto	120
Frying pans, iron	135
Basins, copper	34
Sealing wax	350
Wax cloth	860 yards.
Tape, coarse	19,070 „
Ink, marking	200 lbs.
Close stools, wooden	13
Copper pans for ditto	9
Soap, European	1,822 lbs.
Oil, sweet	6,409 „ (290½ gallons.)
Oil, turpentine	100 bottles.
Dishes, copper	3 (11 lbs. 14 ozs.)
Oil, linseed	248 bottles.
Oil, neat's foot	2 maunds.
Bail, fruit	77 lbs.
Pomegranate root	26 lbs. 1 oz. 9 drs.
Chisels, ripping	128
Cups, drinking, 1 pint, tins	652

Name of Stores.	No. or Quantity.
Dishes, meat, tin	283
Forks, dinner	3,820
Infusers, tea, with stands complete	28
Ladles, soup, pint	80
Matches, wax	395 boxes.
Plates, tin, dinner	4,207
Spoons, table, iron	3,961
„ soup, gravy	19
Shapes, pudding, tin, quart	332
Triangles, with tubular joints complete	76
Basins, wash-hand, zinc	272
Bottles, oil, tin, 2 quarts	29
Buttons, metal	1,575
Soap, Europe	6 cakes.
Candlesticks, tin, &c.	496
„ with shades	32
Choppers, meat	151
Close stools, field service	167
Cotton, darning	66 ozs.
Cups, spitting, zinc	627
Hammers, claw, small	119
Needles, darning	96 packets.
Porringers, block tin, small	189
„ „ large	24
Saws, meat	92
Scissors, lamp	111
Straps, leather	142
Thread, white	46 lbs. 14 ozs.
Kettles, tea, folding handles	22
Axes, pick	419
„ felling	174
Baskets for half-a-doz. bottles	51
Baths, foot	106
Billhooks	207
Brushes, shaving	114
„ shoe	69
„ washing	307
„ whitewash	127
„ hair	340
„ dust	124
Buckets, water	88
Cans, soup, 3 gallons	95
Combs, hair	380
Corkscrews	393
Forks, carving	96
„ flesh	78
Hasps and staples	117
Knives, carving, large	100
„ for opening tins	249
Pickles, country	781
Knives, dinner	4,174
„ butcher	45
Lamps, table	186
„ operating	44
Lanterns, tale	62
„ coloured glass	78

Name of Stores.	No. or Quantity.
Measure glasses, graduated, 4 ozs.	113
Measures, oil, ½ pint, tin	9
„ porter, quart	43
„ „ pint	69
„ „ half-pint	59
„ wine, 1 gill	73
„ „ ½ „	66
„ milk, 1 „	27
Padlocks, large	192
„ small	84
Pails, slop, with cover	39
Pans, close stool, metal, zinc	144
Pans, bed, metal, zinc	215
Pans, frying, copper	137
Pepper castors, tin	159
Pots, chamber, zinc	1,346
„ coffee, small	72
„ mustard	81
Burners, tin, double wick for candlesticks	297
Razors	108
Razor strops	81
Salt cellars, wooden	134
Scissors, hair-cutting	60
Shovels, large, common	66
Spoons, mustard, ivory	46
Tins, meat, for baking	120
Urinals, metal, pewter	301
Warmers, stomach	66
„ foot	36
Weighing machines, for meat	21
Wicks, for lamps	131
Scales and weights, from ¼ oz. to 4 lbs.	10
Ditto, ditto, up to 4 lbs.	5
Ovens, copper, portable	66
Hoes	24
Boilers, iron	45
Baskets, cloth	110
Brushes, scrubbing	171
Cans, oil or water, 3 gallon	116
Dishes, soap, round tin	144
Glass measures of 4 ozs., fluid	2
„ „ 1 dram	2
Skewers and chains	6
Spades	60
Saucepans	21
Hooks, reaping	42
Lanterns, tin, glass	1
Burners, tin, for lamps	32
Needles, packing	1,242
„ sewing	258
„ „	336 packets.
Rivets, iron	570
Filters, water, in wicker baskets	36
Saws, hand	20

Name of Stores.	No. or Quantity.
Twine, Bengal	1,329
Scales and weights, up to 7 lbs.	20
Buckets, leather	306
Scoops, hand, tin	33
Cans, oil, 3-gallon	190
Measures, oil, ½ gill	24
Close-stools, with copper pots	7
Scales and weights, up to 2 lbs.	19
Pans, tin	22
Bladders	72
Needles, stitching	72
Scales and weights, 4 oz.	80 sets.
Forks, table	75
Knives, table	75
Cup, pewter	1
Chloride of zinc	450 lbs.
Pots, tin	6
„ „ quart	8
Diemally root	724 lbs.
Nitrate, silver	52 bottles. (7 lbs. 4½ ozs.)
Sugar, bate	624 lbs.
Nitre	260 „
Sulphate of iron	283 „
Saucepans, tin, 6-quart	10
Tincture of iodine	52 bottles. (26 lbs.)
Opium	30 lbs. 11 ozs.
Carbonic, acid, ointment	156 lbs.
Aloes	588 „
Alum	880 „
Spirits of turpentine	283 gallons.
Aloes, Barbadoes	9 lbs.
Cantharides	21 lbs. 8 ozs.
Acid, carbonic	25 lbs.
Sugar seed	50 „
Spirits of nitre	13¾ „
Tincture of opium	12¾ „
Shang	6,000 „
Oil, linseed	17 lbs.
Tow	1,525 „
Funnels, Gloster	75
„ glass	52
Scales and weights	77 sets.
Pocket cases	25
Candlesticks, brass	77
Syringes, 8 oz.	25
„ 2 oz.	77
„ 1 oz.	52
Knives, butter, large	48
„ „ small	48
Bottles, Europe, stopper	156
Chagols, or leather water bags	10
Mussacks	540
Rope, coir	230 lbs.
Brooms, date	206
„ bamboo	14

Name of Stores.	No. or Quantity.
Baskets, large	18
Chests	8
Leeches	300
Steel, butcher's	12
Mortar and pestles, iron	102
Glass measures	52
" " fluid	50
Slabs ointment	52
Gunnies for poultices	1,300
Wicks, cotton, to suit burners	24 lbs.
Filters, water, in wickers	23
Cups, drinking, tin, pint	250
Matches in boxes	104 boxes.
Bed pans, pewter	57
Measures, milk, ½ gill.	33
Lamps, operating	5
Spoons, hand, tin	33
Stands for close stools	2
Brooms, date	400
Burners, tin, with double wick	184
Frames, sea, cot	46
Hammocks	1,972
Beds	867
Pillows	847
Chumchas, brass (spoons)	3,000
Kuttoras, brass (cups)	3,000
Pots, cooking, with covers	114
Thalies, brass (dishes)	3,000
Mustard pots and spoons, pewter	7
Measure, quart, tin	1
" pint "	1
" ½ pint "	1
" ¼ pint "	1
Table, operating	1
Kettles, tea, of sizes, copper	21 kettles. (78 lbs. 4 ozs.)
Pins, iron, with rings	64
Cotton	495½ lbs.
Charcoal	6,810 "
Saws, butcher's	13
Spoons, mustard, pewter	39
Sponges, bath	40
Lanterns, cabin	149
Plates, stencil	34
" alphabet	34
Planes, joiners', with spare iron	3
" jack	12
Resin	400 lbs.
Chests, liqueur, 3 doz.	12
" " 6 doz.	12
Cups, pint, pewter	2,981
Triangles for kettles	37
Camel trunks, small	18
Basins, pint, soup	1,944
" wash-hand, tin	112
Kettles, tea, block tin	28
Bamboo	34

Name of Stores.	No. or Quantity.
Braces, wooden	12
Budla, leather	47
Basins for washing sores	254
Chattees, earthen, spitting	406
" " for water	68
Stewpans	33
" iron, with covers	90
Trays, dressing	19
Tea Trays	36
Stool Pans, copper	28 (38 lbs. 3 ozs.)
Tickets, bed-head, tin	862
Tumblers	79
Steels, butcher's	112
Saws, setter	8
" tenon	16
Pumps, thumb, tin	12
Syphons, copper	21
Pails, clapos and covers	9
Twine, coarse	260 bundles.
Chaggies	67
Camp tubs	34 pieces.
Sieves, brass, 18 meshes	2
" " 24 "	1
" " 45 "	3
Bamboos, large	24
Log lines	20
Trunks, camel	21
Dunnage	10
Chalk	40 lbs.
Dammer	672 "
Hoops, iron	2,352 "
Paint, black	224 "
Twine, European	400 "
Brushes, camel hair	72
" for paint	60
Bungs, wooden	2,000
White lead	100 lbs.
Bamboos nowganie	500
Ropes for nowganies	500
Batil	136
Tanks, iron	326
Tools, tinmen's	22
Triangles, wooden, with chain and hooks	14
Hammers, cooper's	258
Tapes, measuring	4
Traps for rats	20
Triangles, iron, complete	12
Punches	299
Barrel	1
Sieves, brass	4
Powres	438
Tar	682 lbs.
Blocks pully	48
Bits, centre, for braces	12
Bungs, nail	100
Bags, tester, iron	48

Name of Stores.	No. or Quantity.
Chisels, cooper's, of sizes	329
Drivers "	230
Gimlets	48
Grid, iron	97
Glasses, trial, for spirits	22
Hydrometers, with books	6
Crowbars	56
Baskets, hand	38
Boxes, clamp, with iron locks and keys	79
Trunks for records	47
Chairs, office	84
Tables, camp	127
Chairs "	12
Trunks, mule	6
Tubs, 2 gallon	24
Cork press	9
Carpenter's benches, large	4
" " small	4
Nets for charcoal	69
Solder, soft	12 cwts.
Cases, tool, blacksmiths'	11
Triangles, bamboo	62
Bellowes	61
Hoes, iron	107
Tubs, 12 gallon	54
" 4 gallon	60
Tanks	1,000
Carpenters' tools, chests, complete	11
Seals, brass	13
Saws, cooper	22
Coopers' tools, chests, complete	4
Lotas, large	3,000
Feeders, earthenware	93
Weighing machines, platform	49
Awnings	279
Cases, with locks and keys	54
Handles, wooden, for hammers	307
Tarpaulins	5,672
Grates, iron	187
Ropes, European, 5 ins. each	1,183
Pumps, water, complete	6
Scales, with beams, complete	46
Triangles, wooden	41
Ovens, iron, portable	20
Knives, cutting, leather	18
Beaters, leather, iron	18
Files, saw	34
Plates, brass, for peons	411
Plynes	18
Stones for sharpening tools	18
" for beating leather	18
Hammers, pointing	150
Pincers	150
Weighing machines for groceries, from ¼ lb. to 7 lbs., with sets of weights	3

Name of Stores.	No. or Quantity.
Buckets, galvanized	7,171
Brooms, Goa	10,291
Candles	169,625¾ lbs. (or 16,962 lbs. 5½ ozs.)
Funnels, tin	470
Kabooses, complete	191
Life buoys	439
Measures, tin, 1 gallon each	635
Necessary boxes	596
Pots, cooking, copper	292 (weighing 903 lbs.)
Funnels, copper	64 (weighing 292 lbs. 15 ozs.)
Pots, copper, water	24 (weighing 259 lbs. 4 ozs.)
Scales, copper	602
Steelyards	462
Covers, copper	1,099 (weighing 5,824 lbs. 7½ ozs.)
Degs "	452 (weighing 26,976 lbs. 15 ozs.)
Ladles "	445 (weighing 2,105 lbs. 1 oz.
Measures, copper, 1 gallon	81 (weighing
Winchester	449 lbs. 1 oz.)
" " ½ "	78 (weighing 262 lbs. 10 ozs.)
" " ¼ "	72 (weighing 165 lbs. 11 ozs.)
" " dram "	235 (weighing 123 lbs. 12½ ozs.)
Swabs	1,674
Scrapers	11,391
Sheet lead	193
Scuttles, butt	102
Tubs, grog	98
Weights, iron, 56 lbs.	95
" " 28 lbs.	77
Measures, copper, 1 gal. Imp.	44 (weighing 200 lbs. 15 ozs.
" " ½ " "	66 (weighing 190 lbs. 4 ozs.)
" " ¼ " "	64 (weighing 107 lbs. 9 ozs.
Weights, iron, 14 lbs.	77
" " 7 "	73
" " 4 "	88
" " 2 "	73
" " 1 "	73
" " 1 oz.	15
" brass, from 4 lbs. to ½ oz.	18 sets.
" " 1 lb. to ½ oz.	24 "
Rasps	258
Tin for soldering	40 lbs.
Ammonia	30 "
Corks	100 gross.
Chains for hooks for training	100

Name of Stores.	No. or Quantity.
Stakes, anvil	150
Scales, brass, for shroff	8
„ copper „	8
Casks, dry	4,744
Curry stones with rollers	17
Measures, tin, 1 dram	3
Boxes for records	11
„ „ stationery	4
Casks, empty, for water	2,069
Butts for water	849
Baskets, hand, small	2
Cocks, brass	81
Hydrometers	9
Tents, N. P.	19
Tubs, 4 gallon	18
Lanterns, hora	396
Hatchets	1,029
Pumps, copper	652
Weights, iron, from 4 lbs. to ½ oz.	472 sets.
Lanterns, dark, with lock and key	678
Oil, cocoa-nut	38,319 lbs. 6 ozs.
Spoons, ghee, iron	573
Hose, canvas	138
Wicks, cotton	838 lbs.
Scales, balance, spring	102
Disinfecting powder	12,335 lbs. 8 ozs.
Measures, tin, 1 quart	66
„ „ 1 pint	13
„ „ ½ „	45
„ „ ¼ „	13
Blocks, chopping, wooden	8
Pincers	108
Grinding stones	300 pairs.
Chimtas, iron (pincers)	625
Lanterns, tent	310
Handles for pickaxes and powras	336
Needles, shoemakers'	144
Blacking, in tins	3,000 boxes.
Pipeclay	750 lbs.
Galleys, patent, European	2
Measures, tin, Imperial gallon	12
„ „ ½ gallon	12
Chubb's locks, brass	28
Towas, iron	3,000
Lotas, brass	300,0
Chisels, cold	92
Compasses	48 pairs.
Screwdrivers	92
Files, of sizes	62
Hammers	296
Gimlets, large	46
„ small	46
Gouges	89
Covets	78
Foot rules	16

Name of Stores.	No. or Quantity.
Planes, large	31
„ small	31
Saws, large	46
„ small	46
Spokes	31
Bradawls, large	92
„ small	92
Hammers, shoeing	108
Spades, with helves	21
Anvils	61
Measures, copper, Imp. 4 gall.	8 (weighing 124 lbs 6 ozs.)
„ „ „ 2 „	8 (weighing 72 lbs. 4 ozs.)
Vices, large	16
„ of sizes	31
„ hand	61
Files, large	123
„ medium	123
„ small	123
Saws	16
Chisels, large	62
„ small	62
Late screws, large	16
„ small	16
Hammers, large	123
Callipers	16
Boilers, small	3
Brushes, flat	3
Fire engine, complete	1
Brushes, scrubbing	32
Mallets, small, wooden	95
Chests, treasure, small	39
Horses, wooden, slope	8
Pots, cooking	276
Baskets for covers	4,693
Bags, canvas	9,583
„ gunny, single	616,009
„ „ double	—
„ Dungaree, double	7,044
„ sheeting	74,207
„ mat or cuppos	10,829
„ Pudumpaut	197,435
Duffers	915
Hogsheads	1,712
Half hogsheads	27
Cases	20,104
Cannisters, zinc	18,987
„ tin	9,099
„ iron	1,185
Bottles, quart	10,122
„ pint	168
Casks, empty, scuttled	214
Keys	3,940
Jars, European	184
Toonias	2,354
Adzes	92

Name of Stores.	No. or Quantity.
Clothing, &c.	
Banians, flannel	18,659
" loose	38,924
Cumblies, black	18,442
Drawers, flannel	11,730
" loose	200
Coats, great, cumblies	2,375
Dhoties	6,000
Dhopatas	3,000
Bags for bedding	364
Gowns, blue, serge	800
Bundles sheeting, cloth	6,000
Cumblies loose or blankets	11,581
Flannel	99 yards.
Bed covers, waterproof	540
Cases, pillow, straw	1,367
" bolster straw	1,730
" for large pillows	1,205
" for small "	372
Cholera belts	6,770
Sheets, linen	4,611
" cotton	11,313
Shirts, cotton	5,020
Slippers, leather	1,476 pairs.
Socks, cotton	3,894 "
" worsted	42,215 "
Settringees	5,69[illegible]
Great coats, cloth	18,986
Lascars Mirzaits	14,624
Mosquito netting	678 yards.
Trowsers, cloth	17,916 pairs.
Beds coir in lieu of cork	445
Hand towels	5,698
Belly bands, flannel	164
Bed cases, strong, Dungaree	190
" Dungaree	40
Caps, gingham, lined with cotton	230.
Gowns, flannel	110
Shirts, "	5,427
Trowsers, flannel	680
" blue serge	213
Towels, Dungaree	933
Waistcoats, blue serge	831
Blankets, European	10,754
Pyjamas	5,888
Shoes	5,196 pairs.
Banians, flannel, coloured	3,686
Boots, half, English	33 pairs.
Night caps	3,763
Waterproof sheets	11,092
Gowns lined with flannel	30
" " cotton	10
Covers, cotton	358
Numdas or hairy mitchins	150
Boots, English	8,335 pairs.
Beds, hair	911 "
Bolsters, hair	719 "

Name of Stores.	No. or Quantity.
Pillow cases, straw	189
" " large	219
" " small	36
hair, large	1,821
Quilts, gingham, lined with looie	3,032
Cases, slip, for bolsters	769
Canvas	2,000 yards.
Comforters, blue worsted	4,000
Caps, worsted	4,000
Belts for peons	405
Gowns, gingham, lined with flannel	20
Jerseys, blue	4,000
Mitts, worsted	4 pieces.
Cloth, Dungaree	6,000 yards.
Boots	43 pairs.
Clew, for clothes	10 bundles.
Cases, slip, for hair beds	124
Covers, waterproof	1,350
Cloth, Pallumpaut	10,000 yards.
Dungaree for bandages	2,660 yards.
Blankets, country	4,535
Towels, round	25
Tape broad	700 lbs.
Cloth, calico	2,132 yards.
Caps, flannel	40
Gowns, gingham, lined with cotton	40
Gowns, gingham, lined with looie	20
Gowns, gingham, single	40
Slippers, canvas	20 pairs.
Chapples, leather	142
Laces, boots	12,000 pairs.
Banians, blue serge	4,000
Gunny	500 yards.
Slippers, brown	90 pairs.
Bolsters, straw	150
Cases, slip, for hair beds and bolsters	1,887
Pillow cases, Dungaree	120
Stationery.	
Weekly returns on board ship	148
" of sick	1,104
Stamps wafer	3
Straps	3
Paper, Portuguese	18 quires.
Inkstands, pewter	6
Ink powder, red	4 bundles.
Hones	19 "
Books, French paper of 3 quires	8
Certificates for oil and tinning	483
Extra indents for medicine	200

Name of Stores.	No. or Quantity.
Blank books, 3 qrs., 3rd size	1
" 2 " "	2
" 4 foolscap	3
" 3 "	39
" 2 "	13
" foolscap, *or* French paper	16
French paper	253¼ quires.
Bound books	100
Copies of ready reckoners	12
Slates, large	50
Diet rolls	200
Returns of wine expenditure	342
Admission and discharge books	46
Cases book	52
Medical certificate books	50
Guard books	72
Memorandum books	71
Foolscap paper	403–9 quires.
Daily cholera states	27,500
Weekly returns of Medical Officers	1,911
Classified returns of wounds	1,670
Envelopes	8,900
India-rubber	47 pieces.
Ink bottles	47
Ink powder, black	132 bundles.
Blotting paper	34–1 quires.
Lead pencils	159
Quills	2,644
Red tape, skeins	32
Rulers	52
Knives	93
Wrapping paper	57 quires.
Steel pens	92⅔ dozen.
Wafers	26½ ozs.
"	46 boxes.
Indents for hospital bedding	537
" miscellaneous	1,183
" wine, &c.	450
" necessaries	550
" Medical Storekeeper	1,996
Diet sheets	2,903
Ward books	13
Morning states	21,822
Monthly sanitary reports	517
Returns of sick on board ship	275
Weekly returns of sick	1,220
Ink bottles, China	25
India rubber, pieces	3,002
Indent forms	26
Monthly returns of sick	100
Indents for medicines	60
Cattle Gear, &c.	
Pins buck, iron	80
Hides, buffalo	25
Shoree ujwan	6,000 lbs.

Name of Stores.	No. or Quantity.
Urmoodha ujwan	6,000 lbs.
Peny grated root	5 "
Oil, sweet	612 quarts.
Grease	2,000 lbs.
Hand rubbers	300
Tobras	200
Saddles, mule	200
Ropes for mules, loading	200
Charsas for mules	800
Puckals for mules	800
Doles with ropes for mules	800
Charsas for camel puckals	1,000
Slings, camel	6
Mangers, wooden	656
Coorpas with strap or belts	14,640
Hooks, iron	250
Mussacks, leather	30
Ropes, hempen, loading	1,534
Salamoniac	8 cwts.
Sickle, or grass-cutter's knives	12,200
Shoes, horse	4,000
Ropes for sulleetas	350
Saddles, mule, for girths	765
Girths, large, for saddles	2,960
" small, "	355
Hides	781
Bolts, axle-tree, iron	80
Iron	4,100 lbs.
Pieces, yoke, wooden	200
Squire, axes, iron	30
Steel	364 lbs.
Ropes, hempen	1,357
Bran	150,740 lbs.
Gram, raw, ghatly, 1st sort	11,708,770 "
Hay, screwed	39,930,540 "
Pepper, black	46,120 lbs. 11 ozs.
Bamboo baskets, small	13,905
Head pads with horse collars, canvas	1,800
Nets, hay	16,160
Tobras, gunny, paut	10,718
Mats, coir	16,002
Slings, horse, canvas, resting	764
Buckets, horse, pail, galvanized	2,015
Brooms, Goa	5,373
Chloride of lime	1,747 lbs.
Vinegar, country	8,952 gallons 28 dr.
Slings, horse, for hoisting	606
Straw, screwed	5,593,213½ lbs.
Lanterns with locks and keys	1,350
Sir William Burnett's disinfecting fluid	642 gallons 6 dr.
Baskets, large, for hoisting litter, &c.	503
Tubs, large, for watering horses and soaking grain	191
Rock salt	12,820 pieces.
Saltpetre	2,485 lbs.

Name of Stores.	No. or Quantity.	Name of Stores.	No. or Quantity.
Linseed	66,482 lbs.	Bridles, watering	11
Scrapers	868	Heel ropes	165
Disinfecting powders	2,690 lbs.	Saddle and bridle	1
Sponges	1,307	Saddles, pack, for tattoos	58
Oorid	990,350 lbs.	Buffers, wooden	150
Forage, compressed	167,840 „	Sugar canes	2,000
Mutt	1,119,900 „	Butter	46 lbs.
Kirbee	174,166 „	Sugar candy	120 „
Rope, cotton	9,623 „	Googoil	20 „
„ loading	1,348 „	Slings for elephants	6
Gunny, paut, for gear	6,000 yards.	Ropes „	16
Corry combs	4,812	Lime	112 lbs.
Danna coories	1,200	Koolkee	6,040 lbs.
Doomches	1,700	Inderjow	20 lbs.
Gulla bunds	1,750	Phalas papelic	20 „
Head stalls with chain	3,250	Calla jeera	20 „
Hand rubbers, coir	4,601	Ajwan	12,020 „
Head stalls, leather, with chains	1,989	Gunduck	10 oz.
		Para	10 „
Pegs, iron	3,440	Calla bitchwa	10 „
Nuckles with ropes	1,700	Ajwan kafull	20 „
Bulla tongs	1,722	Heera hing	40 lbs.
Churchas	1,200	Gum beed	10 „
Rope, coir, picketing	2,000 yds. (531½ lbs.)	Shawraf	10 ozs.
Ropes, loading, camel, cotton	747	Mosumbee	20 lbs.
Saddles, camel	1,512	Russoondoor	5 ozs.
Sullretas, camel	4,485	Woorkee atel	10 ozs.
Mallets, iron, with handles	83	Mun seed	285 lbs. 10 ozs.
Jools (horse cloths)	1,230	Bulching	10 ozs.
Nails, iron, for cattle shoes	1,441,560	Gyloon	20 „
Kettles, camp, copper, weighing 42 lbs. 4 oz.	2	Talee seooge	10 lbs.
		Sahup	24,024 lbs.
Screws	20 gross.	Awagisee	24 lbs.
Shoes, mule	74,800	Ellchee	24 „
„ bullocks'	56,400	Dalchienee	24 „
Nails, iron	49,460¼ lbs.	Tabaseer	20 oz.
Screws	524	Maythee	24 lbs.
Head stalls, leather	238	Butch	6,020 lbs.
Pickers, iron	263	Head ropes	12
Ropes, coir	87,533	Pegs, wooden	18
Numdas	7,149 pieces.	Hooks, iron	124
Tacks, iron	103,700	Horse box	1
Harness	3 sets.	Puckals, camel	500
Buckets, wooden	283	Chains, iron	4,587 lbs. 12 oz.
Hammers, shoeing	150	Chaff cutters	2
Glue	50 lbs.	Grain crushers	2
Brushes, horse	247	Buckets for camel puckals	800

Statement of Stores shipped for Kurrachee.

Provisions for Europeans.			
Arrack	4,048 gallons.	Mutton, fresh	160 lbs.
Biscuits, 1st sort	540 lbs.	Onions	1,205 lbs. 12 ozs.
Bread, 1st sort	160 „	Potatoes, round	463 lbs.
Beef, salted	327 „	Porter, in quart bottles	5 dozen.
Dhall, moorig	79 „	Pork, salted	276 lbs.
Flour, 1st sort	90 „	Rice, 1st sort	180 „
Firewood	3,540 „	Raisins	27 lbs. 4 ozs.
Mustard	4 lbs. 14 ozs.	Sugar, 2nd sort	50 „ 14 „
		Tea, black, 1st sort	36 „ 6 „

Name of Stores.	No. or Quantity.
Vinegar, country	3½ gallons.
Provisions for Natives.	
Ghee	181,447 lbs. 7 ozs.
Flour, 2nd sort	1,016,580 lbs.
Wheat	424,425 „
Firewood	607,090 „
Dhall moorig	15,240 „
Dates	9,226 „
Gram, parched	9,258 lbs. 12 ozs.
Powah	32 „ 8 „
Rice, 2nd sort	53,040 lbs.
Salt, „	2,544 „
Sugar, „	3,094 lbs. 4 ozs.
Medical Comforts.	
Arrack, proof in quart bottles	16 bottles.
Brandy, French	16 „
Arrowroot	15 lbs.
Sago	23 „
Sugar, 1st sort	26 „
Mustard	7 „
Port wine	11 bottles.
Limejuice	21 „
Disinfecting fluid	1 „
M'Dougal's Disinfecting Powder	120 lbs.
Provisions for Animals.	
Gram	1,835,000 lbs.
Barley	2,303,375 „
Hay	423,400 „
Kurbee	400,000 „
Bhoosa, wheaten	367,500 „
Bran, wheaten	21,461 „
Pepper, black	7 lbs. 4 ozs.
Clothing.	
Banians, flannel	100
Chogas	193
Dead Stock.	
Swabs	19
Steel yards	4
Lanterns, complete	35
Slings, resting	16
Jars, earthen	15
Cases, for ghee	1,321
Bags, canvas or gunny	132,933
Cans, tin, ghee	4,731
Hammocks, complete	7
Mats, country	342
Tobras	400
Hooks, iron	154
Chest treasure	1
Scrapers, iron	66
Needles, packing	100
Twine, Europe	297
Bags, gunny, double	867½
„ canvas	211
Buckets, fire	3
Duppers, leather	16

Name of Stores.	No. or Quantity.
Cloth Dungaree, double	200
Bamboos	500
Quarter galleries	11
Kaboose bot	10
Grates, iron	8
Buts, empty	38
Ladles, copper	12 (weighing 28¾ lbs.)
Lead, sheet	7 (weighing 1,607 lbs.)
Pots, cooking, copper	5 (weighing 60 3/16 lbs.)
Covers for ditto	13 (weighing 18 3/14 lbs.)
Hogsheads, empty	211
Measures, 1 gallon, tin	7
Scales, copper	7
Weights, 4 lbs. to ½ oz.	7 sets.
Bottles, quart, empty	35
Tierces, salt meat, empty	3
Cases of sorts	22
Cock, brass	1
Planks, deal, 9 in. by 1 in.	37½ square feet.
Battens, 2½ in. by 1 in.	75 „ „
Nails, iron	123 lbs.
Battens, wood, 1½ in. by 3 in.	300 square feet.
Poles, wood, 3½ feet long, 3 in. by 4 in.	5
Poles, 10 feet long, 3 in. by 4 in.	6
Tubs, grog	4
Ropes, hempen or tarred	216
Oil, cocoanut	190 lbs.
Numdas	64
Jacks, iron	45 lbs.
Hammocks	40.
Cloth bandages	25 yards.
Lanterns, deck	1
Pumps, copper	13
Force pump	1
Buckets, wooden	33
Brooms, Goa	50
Lanterns, glass	8
Candles, wax	46
Hatchets	9
Ropes, pieces	9
Casks, scuttled	4
Shovels	12
Screws, iron	10 dozen.
Oil, tin, feeders	1
Dhols, leather	200
Chursas	200
Ropes for dhols	200
Wooden handles for dhols	200
Tanks, iron, for water	12
Measures, gram feed, tin	1
Baskets, bamboo	2
Mats, coir	4
Buckets, galvanized	1
Lanterns, horn	1
Tubs for soaking gram	1
Horse box	1
Degs, copper	13 (weighing 314¼ lbs.)
Covers, „	5 (weighing 30 3/16 lbs.)

CHAPTER XXV.

LAND TRANSPORT.—(SUPPLY OF MULES FROM THE MEDITERRANEAN.)

Orders to collect animals in India.

BEFORE the expedition to Abyssinia was finally determined upon, orders* were sent from England by telegraph to Bombay to commence the collection of animals for the transport train, for it was argued that, as time was short, even if the animals were not subsequently required but little loss would be incurred by their collection compared to the expenditure (and inefficiency) that would result if the formation of the Transport Corps were delayed in case that the expedition was found necessary. The Government of Bombay, on the 6th August, telegraphed to England a request that the Sultan and Pasha should be asked to instruct all the functionaries at the Turkish and Egyptian ports to facilitate the purchase of animals.

On the 21st August, the Secretary of State for India asked the Government of Bombay what number of mules, if any, should be sent from this side of the Isthmus of Suez. The Government of Bombay, in reply, telegraphed on the 25th August, that as many mules as could be purchased and delivered at Suez before the end of November, should be obtained.

Orders to collect mules in Europe.

Foreign Office to obtain consent of the Viceroy of Egypt for the establishment of depôts in Egypt.

The Secretary of State for India consequently requested the Secretary of State for War to make arrangements for procuring as many mules as could be ready at Suez before the end of November, not exceeding 7,000, with a sufficient number of attendants to take care of them during their transit across Egypt, and if necessary on board ship in the Red Sea. This was accordingly done, and Sir John Pakington requested Lord Stanley to take the necessary steps for obtaining the consent of the Viceroy of Egypt to the establishment of a depôt at Alexandria for the reception of the mules on their disembarkation, and the formation of a second depôt at Suez, where the mules were to be concentrated prior to their embarkation for their destination on the Red Sea. This was done.

The following were the arrangements made for obtaining the mules required from the north of the Isthmus of Suez:—

Arrangements in Europe for purchase of mules.

The Consuls at Malaga, Alicante, Cadiz, Barcelona, Genoa, Tripoli, Beyrout, Constantinople, and Smyrna, were requested to look out at once for mules, and to assist in every way British officers and others sent out to select and purchase. Such officers were sent, accompanied by veterinary surgeons, to examine and select the animals. At Alicante and Smyrna the Consuls paid the expenses, on the order of the officer, by drawing bills on the Paymaster-General on account of the War Office. The officers proceeding to other stations were accompanied each by a Commissariat Officer, to undertake payment for the mules, and the necessary expense for hiring, stabling, and food for them, and also to hire such attendants as were necessary. These attendants were engaged on the condition of accompanying the mules to Alexandria, and, if *necessary*, to

* Telegrams dated 31st July and 1st August, 1867.

Massowah, with free passage back. In every case where the mule had a pack-saddle, such pack-saddle was to be included in the purchase. The officers received the pay of their rank, and 3*l.* 3*s.* a day, which included remuneration and hotel charges, in addition to their actual travelling expenses.

General direction.

The general direction of the arrangements for the purchase of mules in the Mediterranean was placed under an Officer at Alexandria, who made arrangements for their landing, maintenance, and transit, and for delivering them over to the Indian Government at Suez. This Officer received his pay, and 3*l.* 3*s.* a day in lieu of all allowances. He was assisted by a depôt establishment of the Military Train, and by two Commissariat Officers to make all necessary arrangements for foraging and maintaining the mules at the depôts; one was stationed at a depôt formed at Alexandria, and the other at a depôt at Suez. Such subordinates of the Commissariat Staff Corps as were necessary were attached to each Commissariat Officer, and a veterinary surgeon was attached to the depôt establishment. These Officers received their pay, and, in consequence of the special and temporary nature of the service, 1*l.* 10*s.* a-day each in lieu of all allowances.*

Pay to Officers.

The General commanding at Gibraltar was requested to cause mules to be purchased in the vicinity of Gibraltar, Cadiz, and Malaga, and the General commanding at Malta to cause them to be purchased in the islands, and in the vicinity of Tunis or elsewhere. A veterinary surgeon was sent to each of these stations to examine and pass the mules purchased. Officers detached upon this duty continued to draw their usual pay and allowances, and 2*l.* 2*s.* a-day whilst so employed, to cover remuneration and hotel expenses.

Veterinary Surgeons employed.

The places selected as centres for the purchase of mules were Alicante, Valentia, Majorca, Minorca, Barcelona, Genoa, Smyrna, Scanderoon, Tyre, Sidon, Beyrout, and Constantinople. An Officer of the Military Train or Artillery, to look out for and select mules, proceeded to each of these centres, and was accompanied by a veterinary surgeon. A Commissariat Officer was also attached to draw bills on the Treasury to pay for the mules, and to superintend the necessary subsidiary arrangements for foraging and keeping them till their embarkation, and to hire the necessary attendants. These Officers were under the orders of the Officer at Alexandria, and were to keep him informed of their proceedings.

Military Train Officers.

These Officers were furnished with passports and circular letters of recommendation from the Foreign Office to the Consuls in the Mediterranean ports. The service of purchasing mules being temporary and special, and subjecting the Officers to considerable expense, they received 3*l.* 3*s.* a-day to cover remuneration and hotel expenses, in addition to the pay of their rank. Each Officer proceeding to Italy and Spain, received an imprest of 50*l.* before leaving England, and each Officer for the Levant received 100*l.*

Steam transports for mules.

Seven steamers were chartered by the Admiralty, and despatched to the several ports for embarking mules according to the orders of the Officer at Alexandria. They were provided with compressed forage for the voyage, and took out a supply of head-stalls for use on board; they also took out and deposited spare head-stalls at Alexandria for the use of the mules in transit. These vessels were fitted with steam hoists for embarkation. A veterinary surgeon was on board each steamer to receive the mules, look after them on the voyage, and hand them over to the Officer in charge at Alexandria. He had such assistance as the Officer in charge at Alexandria

* Subsequently increased to 3*l.* 3*s.* a-day.

might direct. These Officers received 1*l.* 1*s.* a-day in addition to their pay whilst on board ship.

Colonel Clark Kennedy was the Officer stationed at Alexandria to direct the entire service, and it was arranged that Military Officers were each to be accompanied by a Commissariat Officer and a Veterinary Surgeon, and an Interpreter was to be engaged when necessary. The instructions to the Officers purchasing mules were as follows :— Col. Kennedy appointed to superintend.

" 1. They will purchase, in conjunction with the Commissariat Officer, serviceable " mules for the British Government, not less than four years old, with bridles and two sets " of spare shoes if possible. The mules to be inspected and passed by the Veterinary " Surgeon. Instructions to Officers purchasing mules.

" They are also authorized to employ the Consuls or other persons to purchase mules, " and to allow such commission, either at a fixed sum or otherwise, not exceeding five per " cent., on approved purchases, as may be agreed upon. Every animal to be branded on " one hoof and on the flank as soon as possible after purchase.

" 2. The mules to be shipped to Alexandria in steamers which have been chartered " by the Admiralty for the purpose.

" 3. The British Consuls at all ports have been instructed to render all assistance.

" 4. Attendants must be engaged to take charge of the mules to Alexandria, and " remain with them one month in Egypt if required; not exceeding one attendant to " eight animals. They will be provided with a free passage home.

" 5. Reports are to be made, at frequent intervals, to Colonel Clark Kennedy, C.B., " especially of the number of animals provided, and attendants hired, to enable him to " send steamers to bring the animals to the depôt at Alexandria. Reports by telegraph " are to be made when necessary.

" Duplicates of the reports as to the number of mules and attendants hired are to be " sent to the War Office for the information of the Secretary of State for War.

" 6. The utmost exertions will be required to procure the required number of " animals before the 1st November, after which date no purchases are to be made.

" The Officers are at liberty to move to any other neighbouring places where a " better supply of animals may be expected."

The instructions to the Commissariat Officers were as follows :—

" 1. They will consult with the Consuls as to the best means of obtaining tenders for " the supply of the mules, and they will accept such tenders and make such purchases as " may be advisable, taking the opinion of the Military Officers acting with them, who will " signify their concurrence on the schedules or tenders, and will certify to the vouchers for " direct purchases. Instructions to Commissariat Officers.

" 2. The ages and sizes of the mules should be stated in the tenders and certificates, " and it should be stipulated that the contractors will be paid in bills at 30 days' sight on " the Lords Commissioners of Her Majesty's Treasury, at such rates of exchange as may " be current or agreed upon on the delivery of the mules, and on their being passed by " the proper officers as sound and according to agreement. Payment may also be made in " cash where necessary.

" 3. They will, in conjunction with the Military Officer, engage the muleteers and " enter into agreements for the hire of stables, supply of forage, bridles, and such other " articles as may be required, making payment, and accounting, in monthly store and " cash accounts, for these and all expenses connected with the service on which they are " employed.

" 4. In engaging muleteers to take charge of the mules during the voyage to Alex-

"andria, care should be taken that proper agreements are made with the men, under the "covering signature of the Consul when possible, and the wages should include every- "thing except victualling on board ship, which will be free.

"5. They will transmit schedules and copies of tenders to the War Office in the "usual manner; they will send a weekly report of the amount expended and number of "mules purchased, and attendants hired; report their transactions generally from time "to time; and they will be guided in all respects, as far as possible, by the regulations "of the Service.

"6. They will advise the Paymaster-General of the bills drawn in accordance with "regulation, and will render their accounts to the Chief Auditor monthly, vouching the "charges by certificates from the Military Officer in charge at the station that the number "of mules paid for were duly embarked for Alexandria, or were otherwise accounted for.

"7. Invoices of the number of mules embarked from time to time for Alexandria "are to be furnished by the Commissariat Officer at the port of embarkation to the "Military Officer in principal charge at Alexandria, who will require from the captain of "the ship, or other officer in charge of the mules while on board, a certified statement "showing that the number of mules embarked were disembarked and duly handed over "to the officer in charge of the depôt at Alexandria, or were otherwise accounted for.

"8. They will make inquiries as to the amount of forage procurable in the neigh- "bourhood in case of a demand from Alexandria, and will ship a sufficient supply of "forage for the voyage, and for seven days over. The supply of compressed forage "may be on board the vessel to be considered as a reserve."

Names of Officers employed.

The names and destinations of the Officers employed on this duty were as follow :—

Destination.	Military Officer.	Commissariat Officer.	Veterinary Surgeon.
Alicante	Captain Whinyates, Royal Artillery.	Assistant Commissary-General Cumming.	Mr. Partridge.
Valencia	Captain Wortham, Royal Artillery.	Assistant Commissary-General Irving.	Mr. Bolton.
Barcelona	Lieutenant Turnbull, Royal Artillery.	Deputy Commissary-General Wingfield.	Mr. Harrison.
Majorca and Minorca ..	Captain Corbett, Military Train.	.. ..	Mr. Death.
Piedmont and Genoa	Lieutenant Roberts, Military Train.	Assistant Commissary-General Baynes.	Mr. Harpley.
Smyrna	Captain Hobart, Royal Artillery.	Assistant Commissary-General Downes.	Mr. Henge.
Scanderoon	Lieutenant Brace, Military Train.	Assistant Commissary-General Maule.	Mr. Tatam.
Antioch and Aleppo	Major Dartnell	Ditto	Mr. Marshall.
Tyre, Sidon, and Beyrout ..	Captain M'Neill	Deputy-Assistant Commissary-General Casolain.	Mr. Fleming.
Samsoon and Trebizond ..	Captain Webber, Royal Engineers.	Deputy-Assistant Commissary-General Furse.	Mr. Anderson.
Gibraltar	.. ..	.. ..	Mr. Field.
Spain, under Mr. Wetherell's Contract	.. ..	.. ..	Mr. Thacker.

On the 2nd September, 1867, Captain Willoughby, R.N., Principal Transport Officer

in Egypt, was informed by the Military Secretary of the India Office that mules would be landed at Alexandria from various points, and he was requested to render every assistance in landing them, and embarking them at Suez. Transport and Quarter-master-General's Departments in Egypt to assist.

Colonel Ross, Deputy Quartermaster-General in Egypt, was also requested to give every assistance to Colonel Clark Kennedy whilst employed in Egypt.

These arrangements were summarized and communicated to the Government of Bombay in the following terms, in a letter of the 3rd September, from the Secretary of State for India, of which the following is an extract :—

Government of Bombay informed of arrangements.

"Having ascertained by your telegram of the 25th August, that you were desirous "of being supplied with as many mules as can be got ready at Suez before the end of "November, measures have been taken by the War Officer to collect, in the countries "bordering the Mediterranean, as many mules, not exceeding 7,000, as can be delivered "at Suez by the time specified.

"The collection of the mules, their maintenance in Egypt, and their conveyance to "Suez, in order to their embarkation, will be arranged by officers appointed by the War "Office; but it will rest with your Government to provide vessels at Suez for the transport "of the animals to their destination; and I request that the Commander of these vessels, "or the officer whom you may send in charge of them, may be directed to report imme-"diately on arriving at Suez to the Transport Agent of the Indian Government, who has "been directed, in communication with the officer in charge of the Mule Depôt, to take "immediate measures for embarking the mules, with a proper proportion of stable equip-"ments, spare shoes, &c.

"I assume that the mule drivers to be employed in the expedition will be natives of "India, or the adjoining countries, and it is desirable that you should send some of these "to Suez to receive charge of the mules from the European or Egyptian attendants who "will have accompanied them thither.

"The vessels which you will send for this purpose will of course be fitted for the "accommodation of the animals, and will convey a sufficient quantity of fodder and water.

"You have been informed by my telegram of the 28th ultimo that the mules will "begin to arrive at Suez in October, and when further information may reach me I "will communicate to you, from time to time, the probable number of these animals for "which it will be necessary to provide transport, and the probable dates on which they "will be ready for embarkation."

Arrangements for conveying mules from Suez to Zula.

The arrangements for conveying the mules from Suez are shown in the following telegram from the Governor of Bombay to the Secretary of State for India, September 4th, 1867 :—

"As soon as the reconnoitring party is landed, our own steamer, the "Coromandel," "1,000 tons, fit for mules, proceeds from Massowah to Suez; and she will be followed by "the "Canning," 1,200. We have chartered the "Queen Victoria," 2,800 tons, for the "same duty, and I hope also the "Samanood," Egyptian steamer, 2,300 tons, now at Suez. "The "Desohzai," Egyptian, 1,062, and "Lagoje," 800, are also at Suez. Tell me before-"hand when the transports will be wanted. I do not like limiting the number of mules "which you can send, lest the supply should fail from Bushire, but I have not reckoned "on so many. Send all you can; send pack-saddles for all your mules."

Trained and untrained mules to be collected.

On 4th September the following telegram was sent from the Secretary of State to the Governor of Bombay :—

"It is very doubtful whether the untrained mules to be obtained in Europe will be "useful. Do you wish us to go on collecting at the present expensive rate?"

To which was sent, as a reply, this telegram from the Governor of Bombay to the Secretary of State for India, 11th September, 1867:—

"It would, of course, be better to have trained mules, but if they are not obtainable, "we must have all the animals you can get, and do the best we can with them. There is "great difficulty in the Persian Gulf, in consequence of the sudden establishment of "quarantine, and therefore we require every animal that can be procured."

Officers and establishments for the formation of mule depôts in Egypt.

For the formation of mule depôts in Egypt,—Major Shervington, 7 officers, and 26 non-commissioned officers and men of the Military Train, and Assistant Commissary-General Robinson and Stanes of the Commissariat Staff, with a Veterinary Surgeon were appointed to assist Colonel Clark Kennedy.

Number of mules required.

On the 6th September, by the desire of the Secretary of State for India, the number of mules to be provided from Europe and the Levant was limited to 5,000, and this decision was communicated in a telegram, on the same day, to the Government of Bombay. On the 7th September, Smyrna was struck out of the list of places where mules were to be purchased.

On the 15th October, the following telegram came from the Governor of Bombay to the Secretary of State for India :—

"More than 5,000 mules advisable; telegraphed, a fortnight ago, to Alexandria, "for addition up to 8,000, either mules or pack-horses,—the latter cheaper and as "good. Instruct Colonel Kennedy as to this."

This was answered by the following telegram from the Secretary of State for India to the Governor of Bombay :—

"We shall obtain for you about 8,000 mules, but we provide only 5,000 pack-saddles. "Can you manage for the rest of the saddles?"

Number purchased.

Colonel Kennedy reported, on the 12th November, that a sufficient number of mules had been purchased to meet casualties, and to enable 8,000 efficient animals to be handed over to the Indian Government.

Office at Alexandria.

A temporary office at Alexandria was furnished to Colonel Kennedy, one of the smaller rooms at the British Transport Office being lent to him for that purpose. It was decided that his operations were not to extend beyond Suez, as it was understood that all transactions on the Indian side of the Isthmus would be made by the Government of Bombay.

The Government of Bombay at first sent agents to Egypt to purchase mules; it was

however found, by Colonel Clark Kennedy, that these officers were brought into competition with the officers of the Home Government. He therefore telegraphed to the Government of Bombay, who desired their agents to leave the purchase of mules in Egypt solely to him.

Assistance of Turkish Government.

The Turkish Government sent the necessary orders to the Imperial authorities of Baghdad, the Hedjaz, and Yemen, to give their utmost assistance to the officers sent to procure beasts of burden in the East.

Spanish muleteers.

The Spanish Government permitted Spanish muleteers to take mules to Alexandria, but these had to present themselves before the Military Governor of the place of embarkation, to be warned of the consequences they would incur if they took service in another country, enlistments for foreign countries being punishable by the laws of Spain.

Cossack horses obtainable.

About 3,000 Cossack horses could have been purchased at Kozloff for about 11*l.* each, but considering the difficulty attendant on the transport of pack animals by way of the Black Sea in autumn and early winter, and the facilities offered in Turkey and Egypt for their collection, Sir Stafford Northcote did not think it desirable that any measures should be taken for obtaining horses from Russia. It was decided, however, that pack horses might be substituted for mules within the specified number, if obtainable at any of the places where mules were being purchased.

Pack horses.

Mules scarce at Tunis, Tripoli, and Alexandretta.

At Tunis, mules were scarce, and their exportation prohibited. The Bey, however, in deference to the British Government, permitted the exportation of 100, to be extended if necessary. No purchase of importance could be made in Tripoli, as mules in that country were extremely rare, and of an inferior kind.

Obtainable at Aleppo.

Very few mules could be purchased at Alexandretta, so the officers sent there went to Aleppo, where they succeeded in buying many, which were sent to Alexandretta for embarkation.

Bulgarian and Servian horses obtainable.

In October, a proposal was made to obtain horses from Bulgaria and Servia. It was too late then, otherwise, doubtless, labour, expense, and risk attending the collection of pack animals would have been diminished in proportion to the number of pack-horses demanded, as they were cheaper and more abundant (particularly in the Levant), and bear sea transport much better than mules.

Transports were taken up, and sent to carry the mules from the different ports in the Mediterranean to Alexandria. Further particulars concerning these vessels will be found in Chapter VII.*

The Military Train stores required for the mule depôts formed at Alexandria and Cairo, were supplied from England.

The following is a list of these Stores:—

List of Military Train stores for mule depôts in Egypt.

Ropes, heel	2,000
„ picket, 16 yards each	1,000
Mauls for ditto	200
Cords, forage (equal to 18,000 yards)	2,250
Nose-bags	7,000
Sacks, corn	200
Pickers, hoof	500
Lanterns	300

* See page 240. Vol. I.

Padlocks, with staples and loops	100
Forges, farriers'	2
Tools, farriers', sets	4
Brands for mules	40
Axes, felling	12
Hammers	20
Stoves, cooking, small	4
Blankets, soldiers', field	100
Head-collars	3,000
Blankets, leather	500
Veterinary equipments, sets	2
Saddles, drivers', with bridles and whips, but without numdahs ..	12
Axes, pick, 6½ lbs.	150
Spades	150
Shovels	150
	lbs.
Grease	112
Nails, iron, clasp, No. 35	10
„ „ „ „ 36	20
„ „ „ „ 37	20
„ „ „ „ 38	20
„ „ „ „ 46	5
„ „ „ „ 57	5
„ „ clout „ 58	3
„ „ „ „ 59	3
„ „ „ „ 66	3
„ „ tacks „ 82	11

Purchased at Malta:—

Carts, Maltese, with covers and lashing ropes, 5-ft. wheels ..	12
Harness for mules, for riding and driving, sets {Near	12
{Off	12

Purchased in Egypt:—

Posts, picket, necessary proportion for 1,000 ropes.	
Blankets or rugs, mule	1,000
Surcingles for ditto	1,000

Commissariat stores for mule depôts.

The Commissariat stores required for these depôts were forwarded from England, and the following supplies were sent:—

500 tons of compressed hay and 300 tons of patent compressed forage. This hay and forage was stored at the mule depôts at Alexandria and Suez, as a reserve, to meet emergencies. A small portion of the hay was put on board the ships conveying mules, for use in case of the ordinary supply of forage running short.

10,000 sacks (four bushels each) to facilitate the transport of grain in Egypt, and for exchange with the masters of vessels for full sacks landed by them. 10,000 sacks were also placed on board each ship conveying mules, to exchange at the ports for full sacks put on board, and 500 sacks were sent to each shipping port, for putting corn on board ship with mules.

Four beam scales (10 cwt. each), with boards and weights complete, and four port-

able weighing-machines, on wheels, to weigh 5 cwt., were sent to Alexandria for use there and at Suez, in the purchase and issue of forage.

200 halters were also put on board each vessel for the use of mules.

The working arrangements for the purchase, transport, and depôts of mules will be found in the following Reports from Colonel Clark Kennedy:— Arrangements in Egypt.

"Having obtained an interview with Chérif Pacha, the Regent in the Viceroy's "absence, and after explaining the nature of the permission and assistance required, His "Excellency stated that every facility would be given towards the assembly and storage "of mules and their equipment in Egypt, and of their transit from Alexandria to Suez. Colonel Clark Kennedy's Report of the 11th September, 1867.

"Upon leaving the Regent, the Director of the Railways, who had been desired to "point out such places in the vicinity of the landing wharf and railway as might be available "for the formation of a mule depôt, took us to three places, one of which, the Gabary "Palace, now unoccupied, appeared suitable as barracks for the depôt and encamping "ground for the mules; but, as the inspection of these places was not concluded till dark, "and there are other sites to be visited to-morrow morning, a final decision cannot be "made until noon, and then all necessary arrangements will be made for quartering the "detachments which left England for Alexandria on the 4th instant, and for the reception "of the first lot of mules that may arrive.

"The cholera having appeared in Malta, no personal communication took place, but "the Governor wrote to say that there were 200 mules ready for shipment to Egypt; I "therefore applied at once upon arrival here to-day to know to what (if any) quarantine "mules from Malta would be subjected, and upon receipt of an answer will communicate "with the Governor of Malta.

"I have reason to believe that a few hundred mules may be obtained in Egypt, and, "if an arrangement can be made with Cairo dealers to deliver them at a certain rate at "our depôt at Suez, a very considerable saving may be effected on the price of each mule, "and acclimatized animals obtained."

"On the 13th, the Viceroy returned from Constantinople, and on the following morn- Colonel Clark Kennedy's Report of the 18th September, 1867.
"ing Her Majesty's Acting Consul-General, having obtained an appointment, presented me "to His Highness at the Ras-e-tin Palace. The Viceroy inquired into the details of the "collection and transit of the mules, and expressed himself in strong terms that every "facility he could afford should be given, and personally confirmed the offer of the site "in the grounds of the Gabary Palace made by his Minister prior to His Highness's "return, and, moreover, added, that orders had been given to all departments of the "Egyptian Government in any way concerned with the mule service to give every "assistance in their power. In the course of conversation the Viceroy stated it was his "intention in about three weeks to send 10,000 men to his Abyssinian frontier, in order "to protect his own territory and subjects from the incursions and excesses that might be "anticipated from the condition of Abyssinia during war.

"After leaving the Viceroy, and having previously examined all probable sites, the "Alexandrian depôt was fixed at the Gabary on the outskirt of the city, where there is "shade and water for the mules, short and direct communication with the railway wharf, "where leave has been given to land the mules, and a disused siding in the grounds, but "in working order, where the animals, their stores, and parties in charge, may be loaded "on trucks for transit by railway to Suez.

"The buildings placed at our disposal, a sort of wing of the now dismantled palace,

" is sufficient to quarter the detachments and provide offices and storage for all the re-
" quirements of the mule transport service, and the Viceroy has repaired and whitewashed
" the buildings to fit them for our occupation, at his own expense.

" In addition, I have secured the promise of very large storage-room from the railway
" authorities (as they state free of charge), in the event of the paragraph in my instruc-
" tions relative to storage being intended to warn me that other stores not connected with
" the mules may be consigned to me, the latter portion of the paragraph being capable of
" being so interpreted; and in a country like this it is necessary to be prepared on all
" points. Moreover, no expense has been incurred.

" These storehouses are very extensive, are close to the wharf near the railway,
" and would hold the stores of an army.

" The surplus compressed hay will be stored at the Gabary, where also will be placed
" the stores of the mule transport service.

" The detachment Military Train, which embarked at Southampton on the 4th
" instant, landed here yesterday, and are quartered at the Gabary, where the buildings
" had been prepared and fitted for their reception with wooden stretchers, bedding
" suited to the climate, large earthenware jars for ablution, &c.

" Arrangements have been made with the Prussian hospital for the reception of
" any of our non-commissioned officers or men who may fall sick, at the rate of 3*s.* a-day,
" which is increased to 5*s.* if the case requires special attendance in a separate ward.
" The establishment, as may be inferred from these rates, is not self-supporting. I have
" inspected it thoroughly; it is well conducted and organised under European medical
" men, and some German Sisters of Charity who devote themselves to the duties of the
" hospital. The Maltese, Spanish, and other attendants attached to the mules will be
" treated when necessary in the European hospital.

" The soldiers at the Gabary will be visited once a week by a medical man in
" practice in the city, who will also be available in case of accident, or any sudden
" attack of illness.

" With respect to that portion of my supplementary instructions to submit a fair
" and liberal commuted rate in lieu of rations in kind, Assistant Commissary-General
" Robinson and myself have been engaged in obtaining information as to prices from
" all sources, including the British Consular authorities, and we will not be prepared to
" submit a final rate for a day or two. The sum will probably range between 3*s.* 6*d.*
" and a dollar for the actual cost of provisions, exclusive of fuel, light, cooking
" utensils, crockery, &c. The basis of the ration to consist of 1¼ lbs. of bread, 1 lb.
" of meat, and 1 quart of good beer—it is very unadvisable to issue spirits of any
" kind.

" With reference to your injunctions 'to exercise the strictest economy consistent
" with efficiency,' I have to assure you that no care or exertion will be wanting on my
" part, and I am confident from my own personal knowledge of Assistant Commissary-
" General Robinson, that that excellent and experienced financial officer will work
" energetically in keeping the expenditure within proper bounds. The expenditure, how-
" ever, will be very considerable.

" The rate of exchange in Egypt is so unfavourable that Mr. Robinson, after con-
" sulting with me, has arranged by telegraph with Her Majesty's Treasury, that the
" necessary funds for our expenditure are to be sent in gold from England, and in the
" mean-time only the sums absolutely required will be obtained by bills.

" The depôt arrangements at Alexandria being complete, I am about proceeding
" this afternoon to Cairo, *en route* to Suez, whither Mr. Reade will accompany me,

"furnished with an order to the Governor at Suez to point out any available sites for "the depôt, and to allot such ground as I may select.

"Tentage for the officers and men to be stationed at Suez has been ordered through "the Consuls to be prepared at Cairo; but, as the weather at Suez is now excessively hot, "I intend to detain the detachment in Alexandria until it becomes necessary to send them "to Suez to prepare for the first lot of mules.

"The men will thus remain under a roof as long as the service will admit.

"Since my arrival here I have been gathering as much information as possible with "reference to the kind of mule required for Abyssinia.

"The opinion of the Egyptian ministers and other officers is unanimously in favour "of the Syrian mule when contrasted with the Spanish mule. Raghib Pacha, the "Minister for Foreign Affairs, one of the ablest men in this country, told me, from his own "knowledge, that during an expedition of Said Pacha's, the late Viceroy, to the Sudan, "the Syrian mules stood the climate, whilst of the Spanish mules 30 per cent. died.

"From offers that have been made, I am satisfied that at least 2,000 mules could "be obtained from Syria by the native dealers, principally resident in Cairo, and delivered "at Suez for about 25*l.* per mule, but it would require from 8 to 10 weeks to carry out "the transaction, and as time is made the important point in the present service, the "proposals could not be entertained; but if the Abyssinian expedition is a longer affair "than is anticipated, and a further supply of mules is required, it would be an efficient "and economical source of supply for any number of mules demanded by the Indian "Government in excess of the present order. The transaction would, however, require to "be arranged with great care and judgment, so as to exclude the mixture of Levantine "mercantile agency in the business.

"With respect to the transit of the mules through Egypt to Suez, it is at present "purposely kept an open question whether they will be sent by railway, by the Suez Canal, "or march across the country, until I can obtain an official answer to my official request "through the Consul-General, as to the terms upon which the railway purposes to carry "the mules to Suez. From all I can gather it will be probably under 2*l.* a head, and will "be inclusive of a charge for landing the mules at Alexandria in some Government horse-"boats now in the Arsenal—an arrangement which, if it can be carried out, will be better "and cheaper than hiring barges from private individuals.

"The communications with the officials of the Suez Canal Company in this country "have satisfied me that, although there is 18 feet of water in Port Said, the transit of any "considerable number of mules could not be depended upon with sufficient certainty as "to time, the risk would be considerable, and the collective expenses for feeding and "attending upon the mules during the transit greater than those of the conveyance "either by railway or of the march by land.

"As to the march across country, it will only be resorted to in the event of any "failure *on the part* of the railway. The placing food and forage at so many stations, "the increased number of men in charge, and risk of loss on the road, would involve far "greater expenditure than even the highest rate the railway could impose; and whatever "difficulties may arise, I trust that, if the animals cannot be carried to Suez, they will be "at least conveyed as far as Cairo by railway, from whence the march across the desert "can be made with more facility than that from Alexandria to Cairo.

"The railway authorities are aware that the Suez Canal Company have made an offer "to convey the mules, and also are aware that, if driven to it, the mules can march.

"Mr. Reade is of opinion that it will be some days yet before I receive a reply as to "the railway charge, and principally because the Viceroy will probably fix the rate himself.

"His Highness has most liberally allowed the baggage of officers and men to be landed "free of duty; and I have had a communication, through Mr. Reade, that no duty will "be charged on the mules, either on landing, passing through, or on leaving Egypt.

"The quarantine between Malta and Alexandria is an unfortunate complication, but "until I receive a list of the seven steam transports, their dates of sailing, and their "respective destinations, I am unable to give any directions to the purchasing parties at "their various stations.

"I hope to receive this information by the mail that left London on the 11th "instant, now due here, but which is not yet reported as in sight.

"I leave this evening for Cairo, accompanied by Colonel Ross, to be present to-morrow "morning, at the request of the Acting Consul-General, at a formal public reception to be "held at Cairo by the Viceroy. Mr. Reade placed some stress upon the point of my "attending upon this occasion. As soon as the reception is over we go on to Suez, to fix "the site for the depôt there, and from thence return to Alexandria without delay."

Colonel Clark Kennedy's report of 25th September.

"I have the honour, in continuation of my letter of the 19th instant, to report that, "after waiting in vain all the next day in the hope of an interview with Khoorshid Pasha, "who was unable to keep the appointment his Excellency had made, Mr. Reade and myself "met him on the morning of the 21st instant, prior to our departure for Suez; and the "Viceroy having given his sanction to certain terms being proposed, the basis upon which "the charge for the conveyance of mules by railway from Alexandria through Cairo to "Suez was accepted by me; but owing to some charges for the minor details of transport, "which it is desirable should be consolidated in one sum, not being yet ascertained, I am "unable to state the exact rate, but the highest possible charge that can now be made, "under any pretence whatever, will be far below the expense of either taking the mules by "the Suez Canal or marching across the country.

"The exact terms in writing will be given to the Consul-General in a day or two "after the return of His Highness the Viceroy from Tanta to Cairo.

"Osman Bey, on the part of the Government, accompanied us to Suez on the 21st, "and after going over the ground in the vicinity of the town, I selected a site for the "depôt on good ground to the windward of the town, near the T arm of the freshwater "canal, and close to the line of railway by which the mules will arrive.

"The distance to the point of embarkation is about three-quarters of a mile. The "space is ample, and appears to have every sanitary advantage to be found in the desert.

"The Governor of Suez approved of the site selected, and the ground is now at "our disposal.

"The tentage prepared at Cairo was inspected and approved of by Colonel Ross "Deputy Quartermaster-General, and myself, the bargaining being conducted by the "Consular Agent in our presence. The tents are those of the country, reasonable in "price. The tents purchased for the muleteers and native attendants are not quite so "good as those brought for the officers and men from England.

"Filters and other articles that are necessary to the health of the establishment are "being provided.

"On the 22nd, Captain M. Willoughby, of the Bombay Commissariat Department, "the officer adverted to in my letter of the 19th, arrived at Suez, together with two other "officers, one a Veterinary Surgeon charged with the purchase of mules and pack-horses "in Egypt and Syria, the purchase of forage, taking up vessels in the Red Sea for mule "transport, &c.

"The telegrams enclosed in my letter of the 19th prevent any clashing on account

" of two parties being in the market at the same time; and as the contract for forage, " entered into on the 23rd instant, is of a favourable nature, and so extended as to enable " any amount of forage (barley and chopped straw) to be drawn at Suez, requisitions from " the Bombay authorities for forage to supply Red Sea transports, or for use upon first " landing at the base of operations, can be complied with.

" Any other articles required by the Bombay Government from Egypt, that are not " transport animals or forage, can be purchased by Captain M. Willoughby or his officers " in the open market without exciting any competition of interests.

" From what I can learn, it does not appear that the Bombay Government are aware " of the instructions which I have received, or of the arrangements made for the formation " of a depôt of mules at Suez for service with the Abyssinian Expedition. Neither does it " seem that any preparations have been made for sending mule transports to Suez, or pro- " viding syces for the mules during the voyage. I have informed Captain Willoughby " that every assistance in our power will be given at Suez towards the shipment of the " mules, and also towards obtaining any number of muleteers from this side of the isthmus " which the Bombay Government may wish to engage to serve with the Expedition, either " by treating with them after their arrival in Egypt, or at the various ports from whence " the mules are embarked for Alexandria.

" Under the doubt existing as to transports being sent from Bombay to fetch the " mules, and a telegram having reached Captain M. Willoughby to take up the " 'Samanoud' and other vessels in the Red Sea, the property of the Azeeziah Company, " and offered through the Consul-General to the British Government, Colonel Ross, " Captain Willoughby, and myself went down to the roads and inspected the 'Samanoud,' " a fine vessel of over 2,200 tons, well suited for the transport of mules or horses, and " capable of carrying about 700 on each trip of about five days to Massowah. The other " vessels are smaller and not so well suited for the service as the 'Samanoud.'"

" The charge for the conveyance of the mules from Alexandria to Suez by railway " has been fixed at 160 tariff piastres (about 33s. per mule), which includes the fares of " muleteers and those in charge. The rate is fair and reasonable, and, unless the pres- " sure upon the railway becomes too severe, there is every prospect of the service being " carried out. Owing to the usual delays in all business matters in Egypt, the official " letter containing the terms has not yet been received, but the proposition has been " verbally accepted. Colonel Clark Kennedy's Report of the 30th September.

" The offer of the Suez Canal Company has been declined, but, should events make " it desirable to attempt the conveyance of mules by that route, arrangements can be " made in the course of a few days.

" The first arrival of mules is expected in two days' time, to the number of 30, " from Brindisi; the weekly steamers to continue to bring from 60 to 70 by every " trip.

" The reports from Beyrout and Aleppo (Scanderoon) promise to afford their quota, " and the mules from those districts will be more efficient for service in the Abyssinian " climate than those from Spain or Italy. A steamer will either be taken up here and " and sent to those ports when a full cargo is ready, or else they will be sent down in lots " by some of the various coasting steamers; either way the charge will be about 2*l.* per " mule. An estimate of numbers cannot yet be given.

" With respect to the 300 mules at Malta awaiting embarcation, proposals were " put out yesterday for a steamer to be taken up for their conveyance here, and terms " will be concluded on the 1st or 2nd proximo. The quarantine still continues, and, were

"one of the mule transports from England to communicate with Malta and embark "mules, there would be very great difficulties in using her in the Mediterranean, and, "although the quarantine here with a clean bill of health is only five days, yet a single "case of illness amongst the muleteers or crew, or a death, would deprive the Govern- "ment of its use at the very time most needed. From what I learn it will cost about "1,500*l.* to take up a vessel to call at Malta for the mules on its return voyage from the "westward.

"Upon the receipt of the mail of the 26th, informing me for the first time that "the number of mule transports was reduced to five, immediate steps were taken to "press the purchase of mules in Egypt; an Officer and Veterinary Surgeon were sent "on the 28th to Tanta, where it was stated mules were to be had. The expedition "failed. Notices are out for Alexandria and Cairo, and probably a few hundreds may "be obtained.

"The accounts of Cyprus as an island abounding with mules are good. The first "steamer for Larnaca does not sail from here until the 10th, and on that day it is in- "tended to send Major Sherinton and a Veterinary Surgeon, unless any change takes "place in present arrangements.

"I am also endeavouring to obtain reliable information as to the prospect of getting "mules together at Suakin on the Red Sea, which, although some distance from the "Abyssinian frontier, is in constant communication with Tigré, and it is supposed that, "were it once known that mules could be purchased there, they would be brought from "Tigré in considerable numbers. I trust to be able to get some definite information "in a day or two, as the person best able to give it is supposed to be at Cairo, and I "have requested him to come down to Alexandria.

"It would be a point of the first importance to be able to secure, at a reasonable "rate, a proportion of Abyssinian mules, especially at the outset of the expedition. A "few hours would enable the steam transports to fetch the mules from Suakin and "land them at Massowah.

"With respect to the requisition of the Bombay Government for 3,000 additional "transport animals, which was transmitted by telegraph on the 28th instant, arrange- "ments are being considered for the supply of that number at Suez by the 20th Novem- "ber, but no actual steps will be taken until your orders are received. I have, however, "telegraphed to-day to Commissary-General Downes, who will arrive at Smyrna to- "morrow, to accept a tender for the delivery of 250 mules from Syria at Suez overland "by the 20th November, at the rate of 26*l.* 10*s.* a mule. If the purchase of the 3,000 "is sanctioned, these 250 will form a portion of that number, and, if not, they will be a "small reserve to meet any loss or failure in numbers from other places.

"From what I can learn from Captain M. Willoughby, the Bombay authorities wish "for a portion of their transport to be pack-horses; they can be procured in Egypt and "Syria at a much less cost than mules."

Colonel Clark Kennedy's Report of the 26th October.

"Yesterday morning the following telegram was sent to the War Office:—'2,085 "'mules assembled in Egypt, whereof 1,517 have been sent to Suez, whereof 580 have "'embarked for Massowah;' and, in addition, I have now to state that, by yesterday "evening, the embarkation of 910 pack animals, on board of the three transports provided "by the Bombay Government, was completed.

"350 pack-saddles were with difficulty obtained and sent by railway from Cairo to "Suez, on the 23rd, 24th, and 25th, for shipment with the mules.

"Articles of camp equipment were provided and handed over with the animals to the

"Principal Agent for Her Majesty's Indian Government, for use on board ship, and to "picket and feed them on disembarkation.

"I have to report the arrival and departure of the following transports and hired vessels:—

"The 'Bolivar,' having sailed from Alicante on the 10th instant, arrived here on "the 19th, having embarked 131 mules and landed 128; these were purchased by the "officers sent to Alicante, and are of a superior and more serviceable class than the mules "received by the 'Venetia.' The fittings of the 'Bolivar' were altered during the "night by the carpenters of Her Majesty's ship 'Terrible;' she was coaled and watered "and sailed for Scanderoon on the 20th, the day following her arrival.

"The 'Empress,' the 'Atlantic,' and the 'Theban,' all arrived on the morning "of the 20th, and, owing to the exertions of the officers and men, the whole of the "three cargoes (with the exception of 60 from the 'Atlantic'), were landed, and "brought up to the depot by midnight without accident. A train, conveying 290 mules, "already in the depôt, was also loaded and sent off to Suez the same day.

"The 'Empress' left Alicante on the 12th instant, with 112 mules, and landed "111; they appear of the same class as those sent in the 'Venetia,'—inferior animals; "four have died from the effects of the voyage, and several others are in a precarious "state. The mules shipped on board the vessel were supplied by Messrs. Wetherell "and Co.

"The 'Atlantic' left Malta on the 16th instant, embarked 300 mules, and landed "them all in good condition. The disembarcation was tedious, as, Malta being in quaran- "tine, every mule had to be dropped into the sea without head-collar, and immersed, a "new halter from the shore slipped on when the mule had been netted out, and then "towed on shore by the boats of Her Majesty's ship 'Terrible.' The whole 300 were "landed without injury. The Maltese mules are in good condition, some of them very "fine useful animals, but a proportion are very small, a few not exceeding 11 hands "2 inches; all, however, are serviceable. The 'Atlantic' was only taken up for the "voyage, but, as soon as she is out of quarantine, she will probably be hired for a "voyage to one of the Levantine ports, on freight, at so much per mile engaged.

"The 'Theban' brought down 218 from Smyrna, and landed all safely and unin- "jured. The mules were sturdy and serviceable, and the 18 pack-horses sent by my "order, as a sample, were the same. This vessel appeared so well suited for the service "in the Levant, that, after having had the opinion of Captain Commerell, V.C. and C.B., "as to her merits, and the owners having offered her on very favourable terms, viz., "2,500*l.* for a month, she was taken up for that time, and Captain Commerell having "placed a Lieutenant of Her Majesty's ship 'Terrible' on board, she sailed for "Lamacca, the port of Cyprus, on the 23rd, whence she will bring a cargo of the mules "already purchased in that island.

"The 'Venetia,' having left Alexandria on the 17th instant, for Beyrout, returned "here on the 22nd with 204 mules on board, which were landed uninjured. The altera- "tion made in her fittings, whereby she carried safely 204 instead of 114, has therefore "answered for a short passage; she was coaled, watered, and sent off to Smyrna within "24 hours after her arrival.

"The mules from Beyrout were serviceable and hardy-looking, but appeared to have "been hard worked from the state of their backs, having evidently been most of them "purchased whilst working on or just out of a caravan.

"The 'Coumoundouros' left Alicante the 15th October, arriving here on the 22nd; "she embarked 170 mules, and landed 158. These are somewhat of the same class as

"those that were shipped under Messrs. Wetherell and Co.'s contract, perhaps a little "better than the two previous shipments.

"The 'Parana' sailed from Valencia 12th instant, with 247 mules, and landed 244 "on the 24th instant. These mules are in good condition and serviceable animals. The "'Parana' is the vessel out of the five best suited for a mule transport, but she is very "slow, and requires to be docked, which could not be permitted.

"The 'Empress' sailed for Gibraltar on the 21st. The 'Coumoundouros,' on the "24th, having been delayed by the necessity of repairs, consequent upon coming into "collision with another vessel on entering this harbour, and the 'Parana' on the 25th. "This latter vessel cannot be expected back from Gibraltar much before the 19th "November.

"The 'Marie Antoinette,' a vessel employed in the cattle trade, was taken up yes- "terday for a single trip to Beyrout, at the rate of 2*l.* per mule, and sailed this morning. "We have the option of taking her for a month at a reasonable rate on her return, "should it be desirable and her voyage a successful one.

"The arrangements for the purchase of the extra 3,000 mules and pack-horses have "now been made in Egypt and the Levant, and I have every expectation of having "them in Egypt by the day named by the Bombay Government, viz., the 20th November, "but there still seems so much doubt as to the actual number of mules purchased or con- "tracted for in Spain, and the means of transport available for their conveyance, that, "at present, I do not see my way clearly to fixing a date when the last Spanish mule "will be landed in Egypt.

"I have the honour to transmit a Return of the arrivals and sailings of the mule "transports.

"The 'Hellenis,' with all the stores on board for the mule depôts, arrived here on "the 21st instant, and, as she was chartered to go into Malta, the stores are all in quaran- "tine, and will not be available until the 28th instant; the delay in sending out this "vessel, her slow rate of speed, and her placing herself in quarantine by going into Malta, "have been the cause of a very considerable increase in the expenditure of the mule "depôts for the purchase of articles absolutely necessary, most of which are on board "the 'Hellenis.'"

Terms upon which muleteers were engaged for service in Abyssinia.

Muleteers were engaged for service in Egypt, and to accompany the mules to Abyssinia, upon the following terms:—

Daily pay, 1*s.* 6*d.*

Free rations whilst on board ship and on service.

A commuted allowance whilst in Egypt of 9*d.* a day in lieu of rations.

A free passage home to place of engagement at the completion of service.

Each muleteer was, moreover, furnished with a numbered card, signed by Colonel Clark Kennedy, issued with blanks, to be filled in by the person engaging him, after having fully explained the terms of the agreement to each individual.

A numerical and nominal roll was kept of the recipients of the cards.

The head men each had charge of 20 muleteers, with pay at the rate of 3*s.* a-day, with rations; they were engaged as muleteers, and, when appointed head men, the appointment and date were written across the face of the card, and signed by the officer making the appointment.

Reduction to the rating of muleteer was made in a similar manner.

Each muleteer wore a metal badge, the badges being numbered consecutively, from 1 upwards.

The badges for the head men were of different metal from those of the muleteers, and also numbered from 1 upwards.

The payments made to each man were noted on the back of the card of engagement; when the card was full, fresh paper was pasted over it, care being taken that the last payment was repeated on the fresh surface.

The muleteers were paid regularly, but, whilst in Egypt, were kept four days in arrears.

In the first instance, each muleteer had charge of four mules. The subsequent proportion of Arab or Syrian muleteers was to be fixed by the Indian authorities.

Organization of muleteers.

The muleteers were organized in divisions of 20, under a head man. A nominal roll, which had to be compared with the muleteers' cards of agreement, was given over with each division to the Officer of the Bombay Commissariat charged with the transmission of the transport animals.

The muleteers were formed into divisions, at the discretion of the Officer Commanding the depôt. Friends and acquaintances were allowed to serve in the same division.

Equipment of Mules.

Each mule and pack-horse was given over with a halter or head-collar, a nose-bag, either heel-ropes or hobbles, and watering-buckets (1 to 8 mules), together with a length of picketing rope proportionate to the number embarked in each transport. A small proportion of common veterinary medicine was placed on board each transport.

Rugs and surcingles were also given with mules or pack-horses requiring that protection, at the discretion of the officer commanding the Suez depôt.

Arrangements completed.

Colonel Kennedy on the 6th November, 1867, reported that the 8,000 mules required had been all purchased, and that arrangements had been completed for their transport to Suez. He then asked for instructions relative to the breaking up of the mule depôt establishments, and to the return of the officers and men to their duty in England, and proposed that all surplus and part-worn stores in possession of the mule depôt should be offered to the officer acting for the Bombay Government in Egypt, that he might select the whole or such portion as would be of use to the Expedition: that tents, wooden bedsteads, and miscellaneous articles purchased for the use of the troops in Egypt should be sold, and the amount credited to the public, and that the officers, non-commissioned officers, and men, should be sent to England in suitable detachments, whenever the closing of the depôt at Alexandria, or continuous embarkation of mules at Suez, would permit of the establishments being reduced.

The officers of the purchasing parties in the Levant and at Brindisi were ordered home to their respective stations, when their accounts were closed, with the exception of veterinary surgeons selected for service in Abyssinia.

Colonel Clark Kennedy's Report of the 12th November.

On the 12th of November, Colonel Clark Kennedy reported as follows:—

"I HAVE the honour to report that the original order to have 5,000 mules at Suez by "the 15th of November, has this day been carried out, and that 5,119 animals have now "been sent through Egypt from Alexandria to Suez without a single accident of any kind.

"The Principal Agent for Her Majesty's Indian Government has already embarked "1,661, and the remaining 3,400 are awaiting the arrival of the Bombay transports.

"The supplementary order for 3,000 additional animals is being carried out as "speedily as possible, and 853 of that number have already arrived in Egypt.

"Since my last letter, the weather has been and is so bad that considerable losses "must occur amongst the mules on board the transports now at sea.

"On the 7th instant four vessels came in: the 'Thomas Snowden,' from Valencia,

"with 198 mules and one dead; the 'Minieh,' from Smyrna, with 382; the 'Minia,' "from Beyrout, with 368; and the 'Theban,' from Scanderoon, with 321. On this day "there was a lull in the gale, and the whole were landed safely.

"On the 9th, the 'Empress' returned from Gibraltar, with 147 mules, four having "died on the passage.

"The gale has now lasted four days, and has increased during the night. Several "vessels have been lost, and much damage done to the shipping, especially to those "arriving from the westward.

"Yesterday four more vessels managed to get into port with great difficulty. The "'Atlantic,' with 190 animals, from Beyrout, and the 'Iberia,' with 200, from Smyrna, "brought in their cargoes alive, but in a weakly state. The 'Italian,' mail-boat, lost 57 "out of 100, and the 'Bretagne,' from Malta, where she had put in to refit, lost four "more in addition to those reported lost in my last letter.

"Only a proportion of the mules on board these vessels were landed yesterday, and it "was impossible to do more, the lighters refusing to go out, on account of the very "dangerous state of the port. It is blowing harder this morning, and we shall probably "lose several of the animals left on board these vessels; there is no present prospect of "being able to land them.

"The details of any losses that may occur will be given in my next letter. The per- "centage purchased over the 8,000 to meet casualties will be ample to cover loss, and "enable 8,000 efficient animals to be handed over to the Indian Government. Both "telegraph lines are broken."

Colonel Clark Kennedy's Report of the 26th November.

The following extract from Colonel Kennedy's Reports describe the after proceedings in Egypt:—

"7,374 mules have been sent through to Suez, out of which number 2,902 have been "embarked for Abyssinia, and 4,472 are now at Suez awaiting the arrival of Indian "transports to carry them away.

"The number at Suez being so large, with no immediate prospect of embarkation, "a number of weak and sick animals are kept at Alexandria to recover their strength, "and also to test whether they will ever become sufficiently efficient to be sent on.

"With reference to my last letter reporting the severe gale then raging, I am glad "to state that all the mules were eventually landed without loss.

"The 'Theban' came in on the 13th instant, with 350 mules from Cyprus, which "were safely landed, and she returned to Cyprus the next day.

"On the 15th, the 'Commoundouros' returned from Gibraltar with 227 mules, five "having died on the passage. She was coaled, watered, and sent to clear out at Brindisi "on the 17th.

"The 'Marie Antoinette' arrived here on the 16th from Beyrout, with 152 mules, "and was discharged on the 18th instant. The 'Cairo' came in from Brindisi, with 87 "mules, and the 'Achilles' from Valencia and Alicante, with 304 mules, one having died "during the voyage.

"The 'Bolivar' came in on the 20th, from Gibraltar, with 131 mules, and the "'Theban,' from Cyprus, with 135; no losses.

"The 'Parana' returned from Gibraltar on the 22nd, with 253 mules, one having "died during the voyage.

"The 'Theban' was discharged, and notice was given to the Senior Naval Officer "that the services of the Admiralty transports 'Bolivar' and 'Parana' were no longer "required as mule transports.

"I went to Suez last week, and can report the very large depôt there in admirable "order.

"Our own detachments are healthy, with the exception of occasional bowel "complaints, which it is necessary to guard against by the use of suitable clothing. "There is no serious illness amongst the 500 or 600 Native muleteers, and the transport "animals are free from sickness, and in good condition.

"The depôts at Brindisi, Cyprus, Beyrout, Scanderoon, and Aleppo are closed, and "the officers ordered to return to England without delay.

"There is some difficulty existing with respect to the depôt at Smyrna; and "Assistant Commissary-General Downs, who was on his way home, has been stopped and "sent up this day to Smyrna.

"Everything in Egypt is working satisfactorily."

Colonel Clark Kennedy's Report of the 3rd December.

"The present state of the mule transport service in Egypt is as follows:—8,106 "have been embarked for or purchased in Egypt, whereof 2,902 have been shipped for "Abyssinia at Suez by the Agent for India, 4,601 are in camp at Suez ready to embark, "and awaiting the arrival of transports from India, 271 have died at sea, and 22 were "landed at Malta, having been injured on the voyage; a considerable number of weak "and sickly animals are being temporarily retained at Alexandria, and the transports "'Empress' and 'Touraine,' with about 400 mules from Gibraltar, are still at sea, "having been delayed by the bad weather, as they have now been away from Alexandria "23 and 31 days.

"Out of the mules now in depôt at Alexandria, there are several more not likely to "become efficient, or render it worth while to send them across Egypt; these I propose to "sell when the depôt is broken up; the authority for so doing I expect to receive by "the next mail.

"As soon as the last mule that is efficient reaches Suez, and the whole of the "accounts with the railway and for general expenditure are closed, nothing will then "remain but the feeding and care of the mules at Suez waiting for transports, which "duties can be well performed by Captain Morrison, of the Military Train, commanding "the mule depôt at Suez, and Deputy-Assistant Commissary-General Stanes. The forage "is all contracted for, to be delivered at Suez, and the payment of the detachment and "arranging for its passage home will be the sole financial duties. I would, therefore, "submit for your consideration that the mules at Suez, waiting for the arrival of trans- "ports, should remain in charge of Captain Morrison, the Commissariat Charge in the "hands of Mr. Stanes, and that the rest of the officers and men not employed at Suez "should return to their duty in England by the first convenient opportunity.

"From what is reported, it does not seem likely that the whole of the mules at Suez "can be embarked for another month."

"The 'Empress' has just arrived with 101 mules on board, in good order. She "cleared out Gibraltar. The 'Touraine' is the only vessel now out, and a coasting "steamer is bringing down about 160 mules from Smyrna; this will make up a total "number of a little over 8,500 mules and pack-horses, from which must be deducted "deaths at sea, deaths in Egypt, and non-efficient animals not worth the expense of their "transit from Egypt to Abyssinia, thus leaving the full demand of 8,000 animals all "efficient and in good condition for transfer to the Agent for India at Suez."

Colonel Kennedy's Report of the 12th December.

"I HAVE the honour to report, in continuation of my letter of the 3rd instant, that "since that date the following vessels have arrived with mules:—

"The 'Empress' arrived December 3rd, from Gibraltar, and landed 101 mules, losing "none *en route*.

"The 'Touraine' arrived December 4th, from Gibraltar, and landed 308 mules, "having lost three *en route*.

"The 'Persia' arrived from Smyrna on the 6th instant, and landed 162 mules and "pack-horses, losing none *en route*.

"These animals, making the last expected, were all sent on to Suez.

"There then remained at Alexandria 20 sick animals, not worth sending to Suez, "on which a Board was held that recommended their being sold; they have been "accordingly handed over to Assistant Commissary-General Robinson, to sell by auction.

"On the 10th instant I had the honour to receive your telegram of the 9th, saying, "'Your telegram of the 7th received; steps recommended therein approved,' in accord- "ance with which I have broken up the Alexandrian Depôt.

"All stores, barrack furniture, &c., were next submitted to a Board, who decided "what should be sent on to Suez to be handed over to the depôt remaining there, or to "Captain Michael Willoughby, of the Bombay Commissariat, for the Abyssinian Expe- "dition, and what, being unserviceable, might be sold.

"Some rope used for fastening the mules in the depôt here was handed over by "Assistant Commissary-General Robinson to Captain Willoughby, R.N., of the Transport "Service here, to be accounted for by him to Mr. Robinson, as that officer might deem "best in the interests of Government.

"The detachment, consisting of Ensign Storr and 11 non-commissioned officers and "men, will embark to-night for England in the 'Southampton' steamer.

"The other officers on duty in Alexandria have been ordered to draw their passage "money and proceed to England by the earliest opportunity.

"The state of the detachment Military Train, and other officers left at Suez, will "then stand thus:—

"1 Captain (Morrison).
"1 Lieutenant.
"1 Ensign.
"17 Non-commissioned officers and men.
"Several Veterinary Surgeons under orders for Abyssinia.
"1 Deputy-Assistant Commissary-General.
"3 Non-commissioned officers and men, Commissariat, under orders to proceed "to Suez from Alexandria.

"With regard to the mules, 3,944 have been embarked for Abyssinia, and 4,459 "remain at Suez to embark, of which I believe 1,600 will probably be embarked by the "18th instant."

Death of Colonel Clark Kennedy.

On the 18th December, 1867, Colonel Clark Kennedy died at Alexandria, after a severe attack of dysentery.

The reports on the supply of mules in Egypt were continued by Colonel Ross, C.B., Deputy Quartermaster-General, and ran as follows:

Colonel Ross' Report of the 4th January, 1868.

"I do myself the honour of reporting that, a few days after Colonel Kennedy's "death, I visited the mule depôt at Suez, where I found everything going on most "satisfactorily under Captain G. E. Morrison, of the Military Train.

"The men of the detachment were all well, the camp was in good order, and most "of the animals appeared to have improved in condition.

"Strong westerly winds impeded for some days the embarcation of the mules. "Two vessels are now taking mules; they will complete their load this evening; 1,458 "animals will then remain to embark, 6,790 having already gone.

"If the vessels expected arrive in time, it is probable that the last mule may be "despatched in three weeks.

"I shall then proceed with the detachment at Suez, as the late Colonel Kennedy did "with that here, unless I have the honour to receive your instructions to the contrary, "namely, assemble a Board to cast any animals not worth sending on, and request "Mr. Staines, Assistant Commissary-General, to dispose of them.

"From what I hear, it appears probable there may be about 100 animals not worth "sending on; 56 animals have died at Suez to this date.

"Thus before the end of this month, there will have been embarked in all for "Annesley Bay 8,148 animals, allowing 100 now at Suez not to be fit to go.

"I shall then assemble a Board, as was done here, on all stores, camp equip- "ment, &c., and request Assistant Commissary-General Staines to arrange for the "transfer to Captain M. Willoughby, Bombay Commissariat, of such stores as he may "wish to take over for the Abyssinian Expedition, and to dispose of the others as he "may think best for the public service.

"The officers and men of the Military Train can then be sent home by mail steamer "to Southampton, and may arrive in England by the middle of February.

"As reports have reached this that there has been some loss among the mules "and horses in Abyssinia, though to what extent is not known, I take the liberty of "asking whether it is wished that any steps should be taken to replace these losses. "If so, if I was informed by telegraph, the depôt at Suez could be detained, and, "without re-opening the establishment at Gabari, I think a small number of mules "could still be purchased in Egypt to supply losses.

"As far as I can ascertain, nothing more is known here of losses of animals in "Abyssinia than what has already appeared in the English newspapers.

"The late Colonel Clark Kennedy frequently mentioned the great service that a "detachment of Egyptian police, stationed at his request at Gabari by Ali Bey, Prefect "of Police, had been to him, and said he would see that they were properly rewarded. "I therefore consulted with the Consul-General, who approved of their being rewarded, "and suggested 20*l.* being given to the Superintendent, 10*l.* to the Serjeant, and 5*l.* "to each of the 11 Cavasses. They were employed three months. I requested Assistant "Commissary-General Robinson, C.B., to pay this. It was done in my presence, and the "men expressed themselves most grateful.

"I propose to give the same reward to a small detachment of police employed "protecting the camp at Suez."

Stations at which mules were purchased and relative adaptation to the service of pack animals.

Mules were purchased from the following stations in Europe and Syria. The order in which these stations are placed shows the relative adaptation to the Service of the pack animals purchased at each:—Cyprus, Brindisi,* Malta,* Cairo, Smyrna, Gibraltar, Alicante,† Valencia,† Scanderoon, and Beyrout.‡

* The mules purchased at Brindisi and Malta were the same class of animal.

† The mules purchased at Alicante and Valencia were the same class of animal.

‡ It was principally the poor class of horses from this place that made the class so low.

Mule depôts in Egypt broken up.

On the 27th Novembe , the Secretary of State for India telegraphed to the Governor of Bombay that, as the 8,000 mules had been collected, he had concurred in a proposal of the War Office to break up the Mule Depôts. On the 17th January, His Royal Highness the Field-Marshal Commanding-in-Chief expressed his opinion that the depôt at Suez should not be broken up till it was finally decided that no more mules or other animals were to be sent from Egypt to Abyssinia. It was decided, however, that the depôt should be broken up, and that any officers and men whom it was desirable to retain, and who wished to remain, should be transferred to the Indian Establishment.* In March, Sir Robert Napier telegraphed for 4,000 more animals. Arrangements to procure them were entered into by the Senior Commissariat Officer in Egypt, but were rendered unnecessary by the early termination of the campaign.

Steamers of the Aziziah Company, chartered at Suez, and others chartered at Bombay, were used to take the mules from Suez to Annesley Bay.

Equipment ordered from England.

The equipment of the Transport Train applied for from England consisted of 400 Maltese carts, 5,000 pack-saddles for mules, 1,000 sets of harness (leader), and 1,800 sets of harness (wheel) for mules. 900 pairs short traces, and 400 whips.

Much correspondence took place in England with regard to the pattern of pack-saddle to be adopted, to meet the above demand, and it was finally arranged that, before any further steps were taken in the matter, the Ordnance Select Committee should be called upon to inspect the present pattern of pack-saddle, according to which it was proposed to make the supply, and to report upon its suitableness for the purpose; and also, in the event of their objecting to it in its present form and material, to suggest a modification or a description of saddle in substitution, stating how soon the requisite number of saddles of such pattern could be got ready.

Otago pattern of pack-saddle selected in England.

Report of Ordnance Select Committee on pack-saddles.

The following was the report of the Ordnance Select Committee, dated the 13th September, 1867, on this subject:—

"The Committee have the honour to report that, in accordance with the instructions "of the Secretary of State for War, they proceeded with Assistant Commissary-General "Bailey and Captain Fen to consider the several questions referred to in the letter from "the India Office of the 11th instant, in respect to the proposed supply of pack-saddles "for the Abyssinian Expedition.

"After a careful consideration of the subject, the Committee have come to the "opinion that it is desirable to at once decide upon adopting the Otago pattern pack-"saddle, furnished from New Zealand in March 1866, with the slight alteration in the "sweep of the side bearing, with the points turned up, proposed by Captain Fenn, so as "to afford further relief to the animal's withers; and their reasons for the change are "as follows:—

"1st. They consider that the Otago pattern pack-saddle is so arranged that the "weight of the load is taken on the animal's back on a long bearing, relieving the withers "from any undue strain, and therefore reducing the chance of a sore back to a "minimum.

"2ndly, and principally. Because, from the evidence of Assistant Commissary-"General Bailey, it appears that this description of pack-saddle has undergone a severe "trial in New Zealand, under varying circumstances and for a long continuance; and that,

* India Office letter, 30th January.

"with the exception of two or three cases of sore backs amongst the animals, the trial "was eminently satisfactory. The trials which have recently taken place at Aldershot "and Woolwich are also most favourable to this construction.

"The Committee are satisfied that the Otago pattern pack-saddle is decidedly pre- "ferable to the present Service pattern, and they recommend that it be adopted in lieu "of it.

"The Committee are informed by the Principal Superintendent of Stores that, in his "opinion, of the requisite number of pack-saddles required for the Abyssinian equipment "(viz., 5,000) a large proportion could probably be supplied in a month, and the whole "completed within six weeks from the date of order, provided that the Indian Store "Department take prompt action, and employ well-known contractors without restriction; "and as the Superintendent, Royal Carriage Department, has stated that his Department "will not be able to undertake the manufacture of the requisite supply, the Committee "recommend that it be obtained from the trade in the most expeditious manner "possible.

"In anticipation of approval of this course, the Committee have taken steps for the "immediate preparation, by the Saddlery Department (Military Store), of pattern saddles "in quadruplicate to guide manufacture.

"The patterns are to consist of three sizes, and the Committee recommend that no "contractor have more than 500 saddles alloted to him at one time.

Otago saddle adopted.

In accordance with this recommendation, the Otago saddle was adopted, and instructions were given to the India Office Store Department for the necessary supply. Patterns were made at Woolwich, and the saddles supplied by the trade. The saddles, as soon as received from the makers, were forwarded overland. 4,000 of these saddles cost 5*l.* 11*s.* 6*d.* per set, and the remaining 1,000 were supplied at 3*l.* 17*s.* 6*d.* per set; but the contractors of these last having represented that they had been losers by the transaction to the extent of 18*s.* 6*d.* per set, a reference on the subject was made to the Treasury, who consented to the extra payment being made, provided that the contractors were willing to have their books examined.

Cost of Otago saddles.

These arrangements were communicated to the Government of Bombay, at whose request ammunition and any stores likely to be carried on pack animals, were packed in boxes of not more than 80 lbs. weight.

Five pack-saddles, on the principle advocated by Lieutenant McMahon, of the Military Train, were also constructed at the Government expense under the supervision of that officer, and sent to Abyssinia, so that the system might be tested.

Report on the action of saddles in Abyssinia.

At the conclusion of the campaign, a special Report was drawn up by Captain Holland, Assistant Quartermaster-General, on each description of pack-saddle or pad used. This Report, with sketches illustrative of each saddle, will be found at the end of Chapter XXVIII.

CHAPTER XXVI.

LAND TRANSPORT.—SUPPLY OF MULES FROM INDIA.

Order to the Bombay Government to collect animals.

THE Government of Bombay received telegraphic orders to collect transport animals dated the 1st August, 1867. On the 17th of that month, the order for the purchase of these animals was given,* and the Governor of Bombay telegraphed to the Viceroy in India for assistance, as there were very few mules to be obtained in the Bombay Presidency. The Viceroy sent orders for the purchase of mules in the Punjab, but informed the Bombay Government at the time that he was not sanguine of success, as the only first-class trained animals were in possession of the frontier force; and these he considered it would be impolitic to take, as the transport of that force was limited, and the corps liable to be called on for active service at an hour's notice.

Orders sent to the Punjab to purchase mules.

The Government of Bombay despatched officers to purchase animals in Arabia and the Persian Gulf, established an agency at Suez, and asked the Government of Madras to aid in its formation. To this request, as to all others made to it, the Government of Madras cordially assented.

Cordial Assistance of Madras Government.

About 1,000 mules were purchased in Baghdad at an average cost of Rs. 124 8 0 each, conveyed to Aden in native craft. Rs. 50 were given for every animal delivered alive.

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* *Resolution of the Government of Bombay.*

On the Governor informing the Secretary of State that, in order to collect transport animals for an Expedition to Abyssinia, it would be necessary to procure them from the Persian Gulf, Egypt, the Red Sea, and from distant parts of India, and that it was desirable to lose no time in doing so, his Excellency received the following telegram from the Secretary of State, dated August 1st :—

"Proceed to collect transport animals; make known to us your requisitions on England without delay. "Inform Government of India."

Poona, 17th August, 1867.

Resolution.

Resolution of the Bombay Government on the collection of transport animals.

The purchase of transport animals should be at once proceeded with under instructions which will be separately given.

2. The accounts of expenditure for this purpose, and for any other preparation for an Expedition to Abyssinia, should be kept distinct, under a general head of "Abyssinian Expedition," in the Military and Marine Departments respectively.

3. The Government of India will be asked to give an immediate credit of five lacs of rupees in the Military Department, to meet the immediate purchases of transport animals.

4. Whenever oral, or otherwise informal orders, in connection with the contemplated Expedition, are given to Heads of Departments, the officer receiving the orders will at once take steps to procure the formal authority through the Secretary to Government, although the execution of the order is not to be delayed thereby.

5. Whatever appointments or nominations may be agreed upon in personal discussion will be formally proposed in the usual manner.

Camels were not taken from India, as they could be obtained from the shores of the Red Sea, from Aden, and from Egypt, but every endeavour was made to obtain mules, and instructions were sent to the Government of the Punjab, directing that if the Lieutenant-Governor succeeded in procuring any considerable number of first-class animals, they were to be well cared for, and placed under charge of a competent officer; that price was no particular object—a certain amount of discretion being exercised in treating the market. Camels. Instructions sent to the Punjab.

Instructions were also sent if any mules could be spared from the frontier force without impairing its efficiency, they were to be secured, and all animals were eventually to be sent to Kurrachee, depôts being arranged accordingly.

The maximum price fixed for first-class mules was 225 rupees each. This price, in comparison with that authorized to be given for those purchased for the Bhootan force was high; but having regard to the nature of the service for which the cattle were required, an increase was found necessary to secure first-class animals. Cost of mules of the Punjab.

The purchase of sound strong yaboos, was also ordered, the yaboos being not ordinary ponies, but regularly trained load-carrying animals, such as come down from the hills laden with fruit, &c. The maximum price of these was fixed at Rs. 150, allowing for them the same increase as for the mules on the maximum rates fixed for the cattle required for the Bhootan campaign.*

The Government of the Punjab established depôts for mules at Rawul Pindee and Lahore. Purchases made in Shahpore were to remain at that place until picked up by the Rawul Pindee mules on their way to Mooltan. Depôts at Lahore and Rawul Pindee.

The Commandants of some of the Punjab Infantry regiments† were directed to dispatch from each corps six good serviceable mules, with gear and selected well-trained muleteers, to form the nucleus of the Lahore mule train.

The purchase of mules and yaboos without limit as to numbers, was ordered, but purchases were only to be made up to such a date as would admit of all reaching Kurrachee by the 1st December. They were to move by land to Kurrachee.

Mules and yaboos purchased by the Commissariat at Umballa and some stations in the Sirhind and Lahore divisions were ordered to be sent to the Lahore depôt, and any that had been purchased in the Peshawur division were sent to Rawul Pindee.

The articles provided for each mule purchased were as follows:—

1 blanket, 1 pack-saddle, head stall, heel ropes and pads, watering bridle, gram bag, curry comb, head chains, and a sûleetah. The cost of these was from 27 to 30 rupees per mule. Punjab mule equipment.

The Lahore train left Mooltan, with 1,619 animals, on the 11th November. The Rawul Pindee train left Shahpore, with 1,022 animals, on the 4th November, making a total of 2,641 animals, supplied from the Punjab and ordered to embark at Kurrachee for Abyssinia. A large number of mules was also purchased in the Punjab for regimental use, but these were attached to regiments, and not brought on the Land Transport returns in India. Departure of Lahore and Rawul Pindee trains.

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* Maximum price of a mule for Bhootan .. .. Rs. 180
" " Abyssinia 225
" yaboos for Bhootan 120
" " Abyssinia 150

† Guide Corps; 1st and 3rd Seikh Infantry; 2nd and 6th Punjab Infantry; 5th Goorkhas.

The following Return shows the strength of the establishments of the Lahore Mule train as it left Lahore.

Establishment of Lahore train.

No of each.	Detail.	Pay in India per mensem.	Pay abroad per mensem.	Complement.
		R. A. P.	R. A. P.	
17	Jemadars	16 0 0	19 8 0	23
98	Mates	9 0 0	12 8 0	105
1,050	Syces	6 0 0	9 8 0	1,150
7	Bheesties	6 0 0	9 8 0	23
7	Langrees (cooks)	6 0 0	9 8 0	23
3	Moochees	10 0 0	18 0 0	16
1	Salootree	20 0 0	30 or more	1
1	Nalband (farrier)	16 0 0	24 0 0	1
1	Sirdar Mistree	20 0 0	30 0 0	2
2	2d Mistrees	18 0 0	25 0 0	2
2	Filemen	12 0 0	18 0 0	2
2	Hammermen	7 0 0	10 0 0	2
1	Fireman	7 0 0	10 0 0	2
1,541	Mules	—	—	—
78	Ponies	—	—	—

The European Officers attached were :—

1.	Lieutenant Ross - - - - -	Staff pay	400 0 0	per mensem.
2.	„ Chalmers, not joined yet -	„	150 0 0	„
3.	„ Gaselee - - - - -	„	150 0 0	„
4.	„ Ryves - - - - -	„	150 0 0	„

The following is the Return of the Establishment of the Rawul Pindee Mule Train, consisting of 1,022 animals, as it left Shahpore :—

Establishment of Rawul Pindee train.

Establishment.	Present.	Full Strength.	Pay in India per mensem.	Pay abroad per mensem.
Jemadars	11	11	16 0 0	19 8 0
Duffadars	52	52	9 0 0	12 8 0
Drivers	514	536	6 0 0	9 8 0
Cooks	9	11	6 0 0	9 8 0
Bheesties	6	6	6 0 0	9 8 0
Mochees	6	11	10 0 0	18 0 0
Head Mistree	1	1	22 0 0	32 0 0
2d „	—	2	18 0 0	25 0 0
Assistant Mistree	5	6	7 0 0	12 0 0
Salootree	—	1	Not fixed.	
Farrier	1	1	14 0 0	22 0 0
Moonshee	1	1	30 0 0	30 0 0

The European Officers attached to this train were:—

Captain Bainbridge - - -	On a Staff-pay of Rs.	400	0 0 per mensem.
„ Roddy - - - -	„ „	150	0 0 „

The Lahore and Rawul Pindee mule trains were under military control; the muleteers were disciplined and armed.

Besides these mule trains all regiments despatched from Bengal took with them their full equipment of mules for field service.

Several levies of Punjab muleteers and many camelmen were afterwards engaged and sent to Abyssinia, under the command of selected officers, for duty in the Transport Train generally, and to replace the Egyptian and Turkish drivers. Punjab muleteers.

The good and cheerful services of the Punjabees employed as muleteers during the expedition, the readiness with which they took service, their desire to be regarded as a military body, the facility with which they learned their work, and acquired a military organisation, were in marked contrast with the qualities of the men who engaged themselves as muleteers in Egypt, Syria, Turkey, Arabia, Persia, and other countries not under British rule. Captain Kelly, 1st Battalion, 2d Queen's Royal Regiment, who commanded a Division of the Transport Corps in Abyssinia, took 1,600 of these men, when the campaign was concluded, to the Punjab, where they were disbanded. His report showed that they went to their homes well contented with their treatment while in the Transport Service. Their good services.

On the levies of muleteers being raised, the Punjab Government, as noted above, appointed Officers to command. These Officers had an opportunity, before arrival in Abyssinia, of learning something of their men, correcting faults in the organization, promoting the smart and intelligent, and reducing the worthless. The latter was necessary, as, with the best intentions, it was difficult for the civil authorities always to select the men most fitted for the positions of Native Officers in so short a period. An opportunity was also afforded to teach the men a few military movements, such as falling in quickly, taking ground to the right or left, and moving together compactly. On arrival in Abyssinia, the levies were broken up and distributed to the different divisions. Distribution on arrival in Abyssinia.

The levies were divided into companies. The strength of each was, one jemadar, five duffadars, one bheestie, one cook, 50 drivers, or, as they preferred to be called, "Sepoys." As it was not anticipated that a company would be broken up, subdivisions and sections were not formed. Organization and discipline.

The natural aptitude of these men for a military life, their perfect obedience and desire to please made their organization and discipline a comparatively easy task. Amongst a large number of men, raised in so short a period, there were some bad characters, but crime was not prevalent, it generally arose from disputes about money lent, gambling, &c. Disobedience of orders or breaches of discipline were rare.

The good conduct of the men was attributable to their natural dispositions, and to the influence which the Native Officers exercised over them for their good. The Jemadars were an excellent body of men. Native officers.

During their return march in India to their homes there were no regular monthly payments made. They received advances sufficient for their wants. Though this was a subject of complaint at the time, it was a measure which ultimately tended to their good and contentment. On discharge, each man took with him to his home a sum varying from Rs. 20 to Rs. 60. The accounts were kept by the Commanding Officer in English, a similar account being kept by a Moonshee in the vernacular, and a Duffadar in each company kept an account of the advances, &c., issued. Pay on their return.

Adjustment of claims.

The Government of India caused a Committee to be assembled at Mooltan, to inquire into the claims of the men. Every individual was brought before, and questioned by, the Committee. They generally claimed compensation for clothing lost in Abyssinia, or for a deficiency in the issue there. These claims were all registered, but the Committee recommended that they should be disallowed. The claim on account of money deducted for family remittances, which did not reach their destinations, was in every case allowed, and the different amounts were paid. Pay ceased from the day they arrived in the Punjab. The heirs of those men only who died between the dates of the embarkation of the levies from Kurrachee and the arrival in Bombay, returning from Abyssinia, were considered as entitled to pensions. The number of deaths under this head was comparatively few.

Pensions for heirs of deceased.

Quarantine at Mooltan.

At Mooltan the detachment was placed in quarantine. The arrangements made at Mooltan by the Civil authorities were reported as admirable. Huts and tents were ready; hospitals were established, with a good staff of medical assistants; free rations, including meat, rum, and other comforts, were allowed the sick; Dr. Gray, the Civil Surgeon at Mooltan, superintended the medical arrangements; nothing was left undone which would promote the health and comfort of the men.

Caste of the men.

The companies generally were composed of men of various castes. An effort was made to keep castes separate, but it was difficult to do so. There were, however, three companies entirely of "Muzbee" Sikhs. While the average casualties, in the 25 mixed companies, was $11\frac{7}{25}$, in the three "Muzbee" companies, the average was only $2\frac{2}{3}$. These three companies arrived in Abyssinia in February; two of them were with the advanced force; one was stationed at Pioneer Wells. The low rate of mortality speaks for the strength and endurance of the Muzbee Sikhs.

The men were generally well satisfied. The pay alone would have induced them to enrol themselves again for similar employment. Several went on to Hazara with mules, and when it was rumoured that a levy was to be raised, they all seemed anxious to join it.

These muleteers generally had to undergo much exposure in Abyssinia, and were overworked; as far as Antalo, on the advance to Magdāla, and from Dildee to Zula, on the return, they had a sufficiency of food and water, but during the remainder of the time, they, in common with the rest of the army, were on short rations.

The rations served out to the Punjab muleteers were superior to those given to the other public followers. The former being allowed fighting-men's rations, including meat and fresh vegetables.

Disease was not very prevalent amongst the muleteers in Abyssinia; they suffered more from bowel complaints than from any other disease.

The men discharged as unfit were generally old, or weakly, who should not have been originally sent, or men disabled from wounds or accidents, such as kicks from mules, &c., and some from disease contracted in the country.

The condition of the muleteers at Annesley Bay after the campaign, before they embarked for Bombay, was generally healthy, considering the amount of work and exposure they underwent.

Elephants.

Instructions regarding their treatment.

Forty-four elephants were sent to Abyssinia and shipped at Bombay. The arrangements made for their embarcation, fittings of transports, and full particulars regarding their rations on board ship, have been already noted in Chapter VII.* The following information regarding their health, ailments, &c., collected from various sources, may be useful in future campaigns where elephants are employed.

* See pages 214 and 226, Vol. I.

Appearance and feel of the skin.—The skin should be of a colour approaching to black, and the feel of it should be bristly. A pale coloured elephant with the hair on it downy instead of bristly, is not in good health. Signs of health.

Lively or dull Movements.—An elephant in good health is always in motion, swinging the well stretched trunk and flapping the ears; a listless state, with the trunk more or less gathered up, betokens ill health.

Colour of Mouth and Tongue.—The inside of the mouth and the tongue should be of a rich pink colour, without any black spots on the palate or roof of the mouth.

Colour of spots on Trunk.—The light spots on the head of the trunk and neck and ears should show bloom and health in them. They are, as it were, the complexion of the animal, or beauty spots. Too pale a colour in these spots denotes poorness of health, and too high a colour betokens an overheated state of body and feverishness. The animal will then require cautious treatment and strict attention.

Eye.—The eye of an elephant in good health should appear as large in the evening as in the strong light of the morning. When an elephant becomes overheated in blood, it will affect the eye, and create a scum over it very difficult to cure. Fresh butter, or good sweet ghee, with the rations is as good as anything for them in this state.

Lumps.—Hard lumps found on the belly or round the sides of the animal are of two kinds. One sort (called by the Natives "Butorie") break of themselves, and are the effect of an overheated state of body, throwing itself off in superficial eruption. This sort is not dangerous; but when the lumps are hard, and won't break, they are the forerunners of zahirbad; and if the disease be not nipped in the bud, it will carry off the elephant in the long run. Ailments of Elephants.

"*Must.*"—The usual season for the male to become "must" is during the monsoon, and it remains so for three months. This season may be shortened by cooling medicines. While "must" he will have a discharge of water from two small orifices at each side of the jaw and under the eye.

Nails and Toes.—Inside and under the nails are liable to sores, and so tender does the foot become that pressure of a finger on the spot will make the animal wince. This disease is called "Kandee" by the Natives, and if the sore does not get vent downwards, it will eat upwards, and perhaps even cause the nail to fall off. It is a most troublesome disease, and takes months to cure. Most elephants when in perfect health show a moisture or kind of perspiration at the junction of the toe nail with the flesh of the foot.

Scaly formations of Feet.—The lower part of the foot and above the nails are subject to formations of rough or scaly pieces of flesh. They become very troublesome in wet weather, and are likely to become sores. The Natives call it "Chajoon." These superfluities should be pared off.

Worms—Eating Mud.—Elephants when troubled with worms eat mud, and when eating it, should go "Naga" or without rations; if this occurs oftener than once a month, it is a proof that the mussalahs are not suitable to the animal, and it will fall off in condition. A good mahout will pay great attention to the dung, urine, thirsty or unthirsty state of the animal. Caution is required, and they must be watched narrowly when an unusual state of health is indicated. Naga elephants eating ordinary food are considerably purged. To stop the purging, bamboo leaves should be given. They should also not be bathed or washed.

Sore Backs.—Tumours and abrasions or skin cuts are invariably caused by negligence or ignorance on the part of the mahouts. The mahouts after loading their elephants will often displace part of the load to stow away in concealment some private bundle or other of their property, but too often the negligence consists in the slovenly Remedies for Ailments.

and insufficient manner of stuffing the pads. It is hard work to do it properly, but a good pad is the best preservative against a sore back.*

Tumours.—When a tumour is discovered, a mahout will generally counsel its being pressed away; the effect of this is most deleterious, and will cause the sinuses to run deeper and further into the skin. Apply a poultice of Neem† leaves for two or more days till the skin becomes somewhat soft and the tumour rises near the surface, then rip it open freely, cutting it on either side down the ribs, but never across the back bone.

Treatment of incised Tumours.—There are two modes of dealing with the wound after the pus has escaped, and both are equally efficacious.

1*st.*—Pigeon dung and salt, or root of Madar tree and salt in equal proportions should be put into the sore for a few days after being cut open, to clear away any proud or bad flesh inside, and the wound should be kept warm by a bit of padded stuff over it. After the above has done its duty for a few days, get $\frac{2}{3}$rds bottle of country sweet oil (meeta tel) and $\frac{1}{3}$rd bottle of good spirits of turpentine, with about 4 ounces of clean good camphor (the light sort). Put them all into a quart bottle to dissolve the camphor. It must not be too thick, or the wound will close too quickly, and before the inside is well healed. It would then be necessary to cut it open again. There is no better ointment than this for curing elephant sores.

Treatment of incised Tumours.—2nd.—Fill up the wound with Neem leaves after bruising them in a small quantity of hot water, and remove this plugging twice a-day for three days; and then syringe out with a decoction of blue vitriol, until the wound assumes a healthy appearance. Gundabirosa may then be applied, care being taken that the lips of the wound are kept open, and that the granulation fills up from the bottom.

Treatment of Abrasions.—Abrasions or skin cuts require to be washed clean and smeared with camphor oil to prevent annoyance from flies. Take the animal off work, and such sores will soon heal.

Sore Toes or Feet.—Clear away the vicinity of the sore, wash it well with decoction of blue vitriol forcibly squirted with a syringe till the offensive smell be overcome, then apply

Chloride of lime.....	2 chittacks.
Common lime (best).....	4 „

Mix both into a paste and plaster the wound, which must be closed with cotton or rag to prevent intrusion of dirt. The same may be applied to whitlows or Chajoon sores.

Sore Eyes.—Caustic lotion used with syringe whenever there is any inflammation apparent. For a white film, syringe the eye with a solution of $\frac{1}{2}$ oz. alum in a pint of water.

Green Fodder.

The best kinds of fodder are dull, beernah grass, null, ghone, khebantal, plaintain leaves, fresh paddy straw, doomraieelah (a shrub), branches of goolur, kooksa, jeal, bur, and paukur. Peepul may be given moderately and cautiously, but it is of too heating a nature to be given continuously, and affects the eyes of elephants.‡

Crossing rivers.

Chills.—When elephants are in a heated state it is apt to give them a disease called "Chowrung," if they be permitted to get a chill. Extreme cold has the same

* The experience of the Abyssinian campaign in fitting pads, &c., on elephants to enable them to carry heavy guns, &c., on long and continuous marches, will be found in Chapter X, page 360.

† Neem—Melia Azadirachta.

‡ The different descriptions of fodder named are well known in India.

effect occasionally. The sinews of the neck, chest, and limbs become cramped and contracted, and the animal can barely move. A dram of liquor or a few warm mussallahs may prevent the disease, but months of care will hardly cure it, and the animals will be more predisposed to it for the future.

Quicksands.—When an elephant gets into a quicksand, give him an ample supply of branches, young trees, and water to loosen the sand. Wherever they may be suspected, unload the animals before crossing.

Prior to the commencement of the campaign, some valuable information regarding elephants was furnished to the Government of India by Sir G. Yule, C.B. and K.S.I., resident of Hyderabad; Mr. Perry, deputy-magistrate of Purneah; Maharajah Sir Joy Mungul Sing, K.C.S.I., of Girdhore, in Monghyr; and Maharajah Diegbijoy Sing, K.C.S.I., Rajah of Bulrampore. A memorandum on the subject was drawn up for the guidance of the Commissariat Officers of the Forces.

The subjects treated were as follows:—

" *I. Causes of Disease.*—Want of shelter from extreme heat and cold, excessive rains Causes of
" and storms of wind and rain; want of sleep, owing to inattention to the importance of disease.
" giving them their food in the early part of the evening. Violence in the use of the
" 'Guzboy,' which induces a running of the eyes, which turns into sore eyes; heating
" fodder, which also produces running of the eyes. Bark and leaves covered with birds'
" dung, which brings on spasms; in cutting trees for fodder this should be guarded against.
" Giving elephants grain when they are suffering from worms; the presence of worms is
" indicated by the animals eating mud. And exposure to the sun, the effect of which on
" the brain renders them liable to 'Surzah;' a tremor comes suddenly over the animal, and
" it falls down and dies.

" *General Causes.*—Neglect of mahouts and coolies, inattention to their food,
" which should be clean, wholesome, and sufficient; omission to bathe them daily, par-
" ticularly in the hot weather and rains; overwork and bad driving.*

" *II. Treatment.*—When there is a running of the eyes, the eyes should be washed with Treatment.
" salt and water and a *cooling* salve applied around the orbits. Mud is the natural physic
" for worms. For four days after eating it, no grain should be given. On the third day an
" aperient, and after all signs of the mud have disappeared, half the usual quantity of grain
" should be given for a day or two until the animal appears quite well. To prevent 'Surzah,'
" —there being no cure for it—a cotton wadded covering an inch thick should be placed
" over that part of the head which is oiled. This is only necessary when the animals are
" employed at midday.

" *III. General Care.*—Elephants require sleep, though not much. When an elephant Care.
" has had enough to eat, and is not prevented by noise, want of room, uneven ground,
" &c., he will lie down before midnight, sleep for a couple hours or so, get up and eat a little,
" and then lie down on the other side, rising finally two or three hours before daylight to
" finish his fodder. It takes a considerable time for him to satisfy the first cravings of hun-
" ger, and if the fodder is not given in time to enable him to do so by midnight or there-
" abouts, he will go on eating all night and not lie down at all, and very few elephants
" can stand this want of rest for any time. But what is the practice of Government
" mahouts on a march? After the march is over, the elephant is tied to a tree, or his
" forelegs being fastened together, he is left in the sun, while the mahout eats and
" smokes and sleeps, till he thinks it is cool enough to take or send his animal for

* Five elephants died in Abyssinia. See Captain Holland's Report, page 263, Chapter XXVIII.

"fodder, that is, brought in late in the evening; then the animal has to be, or "ought to be, bathed, then get his grain or chuppattees, and then, unless he has had a "bath before dinner, be watered, so that he does not begin on his fodder till eight "or nine o'clock, and then, voraciously hungry, he eats steadily on till the camp is "awake again. If this sort of thing does not kill him directly, it so weakens his con- "stitution that he is not fit for any real work again. An hour at furthest, after the "march is over, the elephants should go for fodder, be well washed, or allowed to wallow "in water; before sunset get a little fodder, and then the grain, and be fastened for "the night with the night's fodder before them by seven o'clock at latest. An hour "then is of great importance, for it gives them an hour to lie down and sleep, and "that is a great deal to a beast who seldom sleeps four hours, though sometimes after "very great fatigue and a good meal he will lie nearly all night. Early feeding should "be insisted on.

"Habitual work and a sound and timely rest are necessary to keep elephants in "health. When there is nothing for them to do, they should be sent a distance of five "or six cos to bring in their own and working fellows' fodder. They should start very "early in the morning and return before 8 o'clock. After an hour's rest they should "be washed and left at leisure during the night, their chief time for eating and "sleeping.

Diet. "*IV. Diet.*—More attention should be paid to giving elephants fodder enough, and "eatable fodder, not rubbish. No amount of grain will compensate for a continued short "allowance of good fodder; an elephant requires a bellyful of fodder more even than "a horse does of grass, and when not at work, and good fodder is plentiful, his grain "may be safely reduced one-half *if the mahouts can be trusted*, otherwise it will be cheaper "to continue the full allowance, and let the mahouts take their usual share of it.

"The grain given is rice or flour. Water should be given twice a day, and the "elephant bathed daily.

Fodder. "*V. Fodder.*—The descriptions of fodder given are:—Green charah growing in "jheels, goolur, banian or burgud, jack tree, plantain, sugarcane, peepul, pakur, seemul, "amrah, purme, dried dhan plant, nurkut plant, grass of every kind, bamboo, kurean "kans (a kind of weed), dhan with its plants, jowar plant, mundwa, ooreed, and dal."

In Abyssinia the elephants were placed throughout the campaign under the charge of Lieutenant Ouchterlony; and in the preceding Chapters, describing the march of the Force from Zula to Magdala and back again, constant reference to them and the admirable manner in which they conveyed the heavy ordnance will be found.

CHAPTER XXVII.

LAND TRANSPORT.—(ORGANIZATION IN BOMBAY.)

THE organization of the Land Transport Corps at Bombay gave rise to a considerable amount of correspondence. Sir Robert Napier, on the 11th of August, nominated Major Warden of the 24th Native Infantry, to act as Director of Land Transport, subject to the approval of Government, and to such final orders connected with the organization of a Land Transport Corps as might be issued by Government; and orders were given to Major Warden to the effect that he and the officers placed under his orders were to receive charge of and tend such animals as might be made over to them by the Commissary-General; the animals being fed by the Commissariat Department on requisitions signed by the Director of Land Transport or his officers; all purchases were to be made under the arrangements and orders of the Commissary-General, either by commissariat agency or by Land Transport Officers, as the Commissary-General might find most convenient.

Major Warden appointed Director.

The Quartermaster-General submitted to the Government of Bombay, on 22nd of August, the proposals of Sir R. Napier for the organization of the Land Transport Corps, in the following letter:—

Sir R. Napier's proposal for a Transport Train.

"1. It will be in the recollection of Government that, about 11 years ago, a similar "corps was raised for foreign service in Persia, and that on the return of the Expedition in "1857, its field organization was broken up, as too expensive for home service, and the "cattle were distributed at certain stations of this Presidency where field columns are "ordered to be held in readiness for immediate service.

"2. I am careful to note this distinction between home arrangements in peace and "those for foreign service in an enemy's country, because in the latter case combination "of transport under one head, and its administration under one uniform system, are "indispensable.

"3. It is requisite therefore to bear in mind that all the proposals which may now or "hereafter be made with regard to the Land Transport Corps for Abyssinia have sole "reference to its existence as part of the army destined to carry out military operations "in that country. Thus any arrangements for purchasing and collecting cattle or equip-"ments that may now be resorted to as a matter of economy, and indeed of necessity, in "India, will not be held as binding in Abyssinia, where the officers, men, and cattle of the "proposed corps will be under the same rules of discipline and organization as apply to "our Artillery and other mounted corps.

"4. Each brigade of the Force will have its transport attached, of the kind and "quantity suited to its wants; and each section of the Commissariat Department in "Abyssinia will be similarly provided for as circumstances at the time being may require; "but the relation of the Land Transport Corps to regiments and departments will be "similar to that of any other department of supply belonging to the Force, the employ-

"ment of its resources being subject to the orders of the officer in chief command "conveyed through his Quartermaster-General.

"5. The first section of the proposed corps now submitted was drawn up by Major "Warden in accordance with the system of organization adopted in the original Land "Transport Corps (now the Military Train), which Government may be aware forms a "component part of the permanent establishment of the British Army.

"6. It treats of the number of European and Native officers, men, and establishments "required for the efficient performance of the duties of the corps.

"7. In order to enable a comparison being drawn between the scale now proposed "and what was sanctioned for Persia, I have had two separate statements drawn up (Nos. 1 "and 2, attached), which give the requisite information.

"8. It will be seen that there is a difference of expense amounting to Rs. 123 per "100 mules per mensem in favour of the Abyssinian prospectus.

"9. The permanent charges in the latter will be as follows:—

	Rs.	
"Head-Quarters' Staff of the corps, Director's pay, and Office Establishment	2,520	per mensem.
"Pay of his Staff Officer or Adjutant	600	"
"Pay and Office Establishment of the Second in Command	1,388	"
"Pay of a Veterinary Surgeon	400	"

"Monthly Cost of each Division of Mules.

"Establishment of one Division.	Each Division, including European and Native commissioned, non-commissioned, rank and file, syces, veterinary, and artificers' establishments, 20,210 rupees.
"1 Field Officer or Captain Commanding.	
"2 Lieutenants.	
"4 Subedars.	
"4 Jemedars.	
"16 Havildars.	
"16 Naiques.	
"100 Privates.	
"1,040 Syces.	
"1 Serjeant-Major.	
"2 Quartermaster-Serjeants.	
"Artificers' Establishment.	
"Veterinary "	
"Office "	

"10. A Division is composed of,—

"*Squads.*—Each 1 private, 12 syces, 25 mules.

"*Sections.*—Each 1 naique, 5 privates, 65 syces, 125 mules.

"*Troops.*—Each 2 Native officers, 4 havildars, 4 naiques, 20 privates, 260 syces, 500 mules.

"A brigade of the corps is two troops; 1,000 mules. Each brigade is commanded "by a subaltern. Two brigades are included in a division; the division being commanded "by a Captain or Field Officer, as the case may be.

"11. The weight of baggage carried by a division of mules is about 180 tons, and "in a mountainous country like Abyssinia it would be requisite to have at least half the

"transport of the Army in mules and ponies, which, with a corps of coolies, could alone "accompany the troops across country in any direction that field operations might render "necessary: thus, his Excellency the Commander-in-Chief recommends that at least "10,000 mules and a corps of 3,000 coolies be procured, four coolies being estimated as "equal to one mule.

"12. A division of camels would be subjected to similar organization, but as camels "usually carry 400 lbs. each on field service, or double the burthen of a mule, the imme- "diate expenses would be considerably lessened by their use. Taking, however, into "consideration all the casualties of a campaign, the cost price of camels, and the great "loss of life that occurs amongst them, the mules are by many pronounced the cheaper "transport in the end; but whether or no, they are the only reliable transport for a long "campaign across a difficult mountainous country without roads, and they will remain at "work for years afterwards, which camels do not, as we know from the fearful mortality "amongst those animals which took place when the Bombay columns proceeded through "Sinde to Affghanistan in 1838 and 1840.

"13. His Excellency Sir Robert Napier recommends that a corps of coolies be "sanctioned (as raised in China) to work as pioneers and porters; but his Excellency is of "opinion that this corps should be distinct from the Land Transport Corps under report. "Its organization, therefore, will be treated of separately.

"14. The main line of communication between the base at the port of debarkation "and the advanced posts of the Army having been fairly established and cleared for the "passage of artillery, with depôts of supply at stated intervals, an immense saving of "expense would be effected by the use of wheeled conveyances along that line; but it "must not be lost sight of that their use will be confined to that line, prior to the existence "of which they would not be of the least use in so uninterruptedly mountainous a country "as Abyssinia. The clearance of such line must therefore be preliminary to the intro- "duction of this kind of transport. A pattern waggon and a pattern cart are under con- "struction at Poona; and his Excellency the Governor, having resolved to construct "100 wagons and 500 light carts (the former for mule or horse draught, the latter for "bullocks), his Excellency the Commander-in-Chief recommends that the construction of "these vehicles be contracted for in the Ordnance Department, under the orders of the "Inspector-General of Ordnance, and that they be passed into the Service by Select Com- "mittees of Officers.

"As draught for the waggons referred to, I am to suggest, for the consideration of "Government, the expediency of using any available aged Artillery horses of the field "batteries in garrison in this Presidency, their places being filled by remounts pur- "chased during the approaching season. Harness should be provided by the Ordnance "Department.

"15. It will be the duty of the European and Native commissioned and non-commis- "sioned rank and file to supervise the feeding and cleaning of the cattle, and to have "charge of grain, forage, and equipments; to see that the latter are always kept in good "order by the artificers, and that the syces take proper care of the mules and other animals "under their charge.

"They are responsible that the animals are not ill-treated or overladen; being only "in the proportion of one private to 25 mules, as above detailed, they cannot themselves "assist in loading and packing. This has to be done by the troops themselves, aided by "the syces.

"In the cases of the Commissariat, Field, General Hospital, Engineer, and Ordnance

" Parks, &c., baggage must be laden by the public followers attached, such as dhoolie-
" bearers, store and tent Lascars, coolies, &c.

" 16. A second section of the Land Transport Corps is also submitted, in which the
" question of equipments is treated of with reference especially to the carriage of ammu-
" nition. Pattern pack-saddles and cradles for this purpose are under preparation, and,
" when approved, I am to recommend that 2,000 be ordered to be made up by the Ordnance
" Department, under the orders of the Inspector-General of Ordnance, and that they be
" fitted to mules, and passed into the Service by Committees in the usual way.

" For baggage, the common Native khogeer, now in use with the mules attached to
" the Commissariat Department, appears to be suitable; 8,000 of these, with sullectas, &c.,
" complete, his Excellency recommends being made up under the orders of the Com-
" missary-General for present purposes.

" 17. It is proposed at once to organize the head-quarters of the corps and a mule
" division to the following extent, for which the sanction of his Excellency the Right
" Honourable the Governor in Council is urgently solicited :—

" 1 Commandant or Director-General.	" 4 Subedars.
" 1 Staff Officer.	" 4 Jemedars.
" 1 Second in Command.	" 16 Havildars.
" 1 Commandant of Division (Field Officer	" 16 Naiques.
" or Captain, as the case may be).	" 100 Privates.
" 2 Subalterns of Divisions.	" 1,040 Syces.

" 18. The Native commissioned and non-commissioned rank and file will be drawn by
" volunteering from the Native regiments of Infantry in the Presidency, and his Excel-
" lency proposes to arm them with a short sword, or a shield and spear, as may be decided
" on hereafter.

" 19. Syces may be entertained to the extent of 1,040, according as drafts of mules
" and ponies are received or known to have been purchased in India, or by the officers who
" have just left for the Persian Gulf, or by those who may be shortly despatched to the
" Red Sea and East African coast.

" 20. I may here remark, with reference to what may appear a large office establish-
" ment for the Director, that the duty that devolves on his office is considerable. He keeps
" registers of all animals, of the various kinds of equipments, stores, material for work-
" shops, pay and advances to the corps and establishments, general and regimental
" returns, and a large current correspondence. It is essential, therefore, in order to
" organize and to put everything into shape before taking the field, that he should at once
" entertain the following establishment, leaving the remainder to be filled up here-
" after :—

" 1 Head Clerk.
" 3 Subordinate Clerks.
" 2 Peons.

" 21. As regards the pay of the Director's Office, it will be seen from accompaniment
" No. 1 that 720 rupees per mensem were allowed for the Persian Land Transport Corps.
" Major Warden states that a competent head clerk, who was formerly employed in that
" corps, and afterwards in the Pay Department in Poona, is willing to accompany him to
" Abyssinia as head clerk, provided his pay is equal to that of a Commissariat clerk hold-
" ing a corresponding position. This may be as much as 300 rupees per mensem, but
" Major Warden proposes to meet any excess of this kind by keeping the aggregate

" expense of his office establishment within the 720 rupees per mensem allowed to the " Director of the Persian Land Transport.

" 22. With reference to the employment of European commissioned officers, a large " number have either volunteered or are willing to join the corps.

" 23. As the work of organization progresses, selections will be made from the Army " for the various branches of the corps for which officers may be required.

" Thus the mules, bullocks, and ponies, the camels, the elephants, and the wheeled " transport will all be subjected to the kind of organization adapted to each, but included " under the one general head of Transport Corps.

" Standing orders for the guidance of the corps will be drawn up as soon as possible, " and submitted to his Excellency the Commander-in-Chief for approval.

" 24. On the subject of sick carriage, our main reliance must be on the established " proportion of dhoolies allowed to regiments, namely, 5 per cent. for European troops, " and 1 per cent. for Natives.

" 25. A proportion of ambulance carts might accompany the force, as useful for the " main line of communication before referred to. As regards the mule cacolet used by " the French, a pattern of which is in the Poona Arsenal, it may be said that even in the " plains it is a precarious and unsatisfactory kind of transport for a sick man, but in a " mountainous country, where the road is narrow and threads its way among precipices " and defiles, it may be pronounced too dangerous, when camels can be used. It would " be better to provide riding camels carrying two men than expose the sick to the danger " of using the cacolet in the mountains; riding saddles, with supports for the back, might " be made up on this account to the extent of 400. (See next para.)

" 26. We have in store a large number of iron camel chairs, which in an open " country are very useful, if good animals be selected for them; they would be very " dangerous on narrow mountain roads, owing to their liability to come in contact with " projecting rocks and trees, &c.

" 27. The proportion of dhoolies for the Force proposed by his Excellency Sir Robert " Napier is, at 5 per cent. for European troops, 177 with 1,062 bearers, and for the Native " troops at 1 per cent., 83 with 498; total, 260 doolies and 1,560 bearers.

" The pack sick transport for the same Force, at 5 per cent. for Europeans, and 7 " per cent. for Natives, will be as follows:—

" For Europeans, 90 camels, each carrying two men.
" For Natives, 290 camels, each carrying two men.

" His Excellency the Commander-in-Chief would suggest that the report of the " Inspector-General, Indian Medical Department, be invited on the subject of pack sick " transport by riding camels, as above proposed.

The Memoranda by Major Warden, alluded to above, ran as follows:—

" Section 1.—Officers and Men.

" 1. I have, as suggested by you, taken up the organization of the Persian " Transport Corps to help me in this work.

" 2. I would, however, at the outset, remind you that the stability of this organi- " zation or its efficiency was never sufficiently tested, in consequence of the Persian War " coming so speedily to an end.

" 3. But I have not adhered to it much, as it is altogether so different (and, if I " may be allowed to say so, inferior) to the corps raised for the Crimean War, in which

"I held the command of a division, that in most cases I have made the latter my guide, "avoiding those errors in it which after-experience brought to light.

"4. I have taken as a basis the construction of one division, allotting to it a "minimum strength of 2,140 mules; of course, if camels or elephants constituted the "division the number of individuals would be reduced in ratio.

"5. In the annexed statement, marked A, I give the distribution of a mule division.

"6. I have included, in statement marked B, artificers and veterinary establish- "ment, taking as a guide the rates of pay given for the Persian expedition.

"7. You will observe that I have ignored all such persons as 'muccadums,' and "given the supervision of these squads to Native soldiers and non-commissioned officers, "either from the Cavalry or Infantry branch of the Army, and I will explain why.

"8. Dearly-bought experience in the Crimea taught us how little we could depend "on this class when it came to actual service; for if punished for neglect, or offended in "the slightest degree, they not only absconded, but carried off the men under them, "revenging themselves by sowing the seeds of mistrust and discontent among all the "muleteers, and if detached with a convoy of mules on any duty (no matter how few in "number) it was necessary to send a soldier in charge.

"9. I would here notice that from ten to fifteen men, with a non-commissioned officer, "were detached from each regiment in a division, and placed under the order of the "Captain of a division of the Land Transport in charge of squads, and right well they "worked; they answered admirably. Proud of being selected from the regiment for "this work, they seemed to vie one with the other as to whose animals should be in the "best order; and this is the reason why I would now so strongly urge the employment "of Native soldiers for the charge of squads instead of muccadums. You will observe "that in my distribution I have placed Native officers in charge of 'troops.'

"10. I attached so much importance to having Sepoys, non-commissioned officers, "and Native officers in charge of 'squads,' 'sections,' and 'troops' respectively, that I "have taken them up first; for the whole effectual working of the corps depends on the "state of efficiency in which each squad of mules and their equipment are kept up.

"11. Before leaving this subject I would add that I propose filling up the vacancies "in non-commissioned officers of sections by promoting the best men in charge of squads, "and filling up vacancies in the latter by calling for volunteers from the Native branches "of the Army.

"12. I now pass on to the officers. No one will deny that their work will be most "arduous, and to be performed efficiently will require bodily health, energy, and ability "of no common order. Even subalterns will have great individual responsibility, for "their charge consists of 1,000 mules with their equipments, and 1,200 men of all ranks "and classes.

"13. Moreover, they are likely to be frequently detached with their brigades as "convoys.

"14. The Captain of a division will have, of course, the command of two brigades "(*vide* Statement marked A), and to the usual responsibility of such a charge the pay "of all classes under his command will devolve, and he in his turn will be responsible for "the correctness of his accounts to the Paymaster of the corps, of whom I have "treated separately.

"15. The Second in Command should, I think, be a Field Officer; and in the "absence of the Commandant (or Director-General) on duty to any distant point, the "whole responsibility will devolve on him.

"16. At other times he would be required to visit the different divisions, and see "personally that everything was in good working order.

"17. A Staff Officer of ability, method, and knowledge of duty in all its details, "is necessary; for whatever efforts may be made to reduce correspondence and paper "work to the smallest proportion possible (and certainly, if this rests with me, it shall be "the case), yet registers of men, animals, equipments, and stores must be kept.

"18. The next officer is a Paymaster to the corps. I propose that the Captain "of division should be his own Paymaster, and he submits his accounts to the Paymaster "of the corps, who must at starting have a good establishment, so that after the cam- "paign little or no difficulty should be found in closing the accounts of the corps if "necessary; for it is well known that the real difficulty of this department only com- "mences with its adjustments; and I purpose, in consultation with Colonel Barr and "Major Chitty, to give the subject my most serious consideration, and to devise a concise "and clear method of keeping the accounts.

"19. No complication should be allowed in the accounts required from the Captain "of a division. It should be a simple matter of debit and credit, the voucher in its "simplest forms, and some degree of trust placed in this officer.

"20. As regards the pay and position of officers. The officers of the Land Tran- "sport Corps in the Crimea (I speak of myself and other Captains of division) held the "same position as the Assistant Quartermaster-General of the division of the Army, and "were paid accordingly. Colonel W. Napier was the second in command, and Colonel "McMurdo the Director-General, whose position was the same as Deputy Adjutant- "General or Deputy Quartermaster-General of the Army; and I would respectfully "suggest that this corps be placed on the same footing.

"21. In closing this section, I ask permission most respectfully to point out how care- "ful should be the selection of officers, European and Native; for the work of a Land "Transport Corps to be done at all must be done well.

"22. There must be no delays, no shortcomings; for in a country like Abyssinia "there will be no remedy or help to fall back on. If it fails, it fails; on the efficiency "and success of the Transport the very existence of the Army depends."

Section II.—Mule Equipment.

"I would divide this section under two heads: the first for the ordinary baggage "and camp equipage of the Army; the second, and most important, for the conveyance of "ammunition.

"The first is easily disposed of, for the ordinary pack-saddle or khogeer, will "meet every requirement, only it must be made of the best material and work- "manship.

"The second, for the conveyance of ammunition, requires as much lightness as is "compatible with strength; and Captain Swanson, Commissary of Ordnance, Poona, has "been good enough to undertake the preparation of a pattern one, for the inspection of "his Excellency the Commander-in-Chief, as soon as possible, and which I will proceed "to describe.

"It is a strong pack-saddle with trees; hooks are fixed on each side where the front "and back trees cross.

"An open cradle made of flat iron bands, with a ring at each end of one side, which "is hung on the hooks.

"This cradle is open at the top, and its dimensions are sufficient for containing "either a box of ammunition or a barrel of powder, which are simply placed in the "cradle without any further trouble, a tarpaulin cover being thrown over the whole if

"necessary. The bottoms of the cradle are attached to each other by a broad leather "band or girth passing under the belly of the mule, and keeps them from swinging "about.

"I should wish to know as soon as possible whether I may enter into contracts "for the supply of khogeers, other mule equipments and gear, and if so for what number "of mules.

"Contracts will also require to be entered into for mule saddles for the animals "employed in draught.

"I purpose laying every article before a Committee for approval prior to its being "received into the corps."

STATEMENT showing the Monthly Expense of one Division, No. 1, and Head Quarters of the proposed Land Transport Corps for Abyssinia.

Strength 2,140 Mules.

Number.		Staff Corps Pay.	Batta.	Horse Money.	Ration Money.	Staff Money.	Total.	Grand Total.
		R. A. P.	R.	R.	R.	R.	R. A. P.	R. A. P.
1	Director or Commandant—Major	640 14 6	228	60	60	800*	1,788 14 6	..
1	2nd in command—Major	640 14 6	228	60	60	400†	1,388 14 6	..
1	Staff Officer—Lieutenant	225 12 0	30	60	60	200‡	575 12 0	3,752 9 0
1	Veterinary Surgeon—if above 10 years.	414 0 4	..	..	60	..	474 0 4	474 0 4
	Each Division.							
1	Captain in command—Paymaster.	374 1 0	41	60	60	{300§ / 100‖}	935 1 0	935 1 0
2	Subalterns	225 12 0	30	60	60	200‡	575 12 0	1,151 8 0
								6,313 2 4

* Assistant Commissary-General.
† As Deputy Assistant Commissary-General 2nd Class.
‡ As Sub-Assistant Commissary-General, 2nd Class.
§ As Sub-Assistant Commissary-General, 1st Class.
‖ As Paymaster.

Number.		Pay.	Batta.	Total of each.	Total.	Grand Total.
		R. A. P.	R. A. P.	R. A. P.	R. A. P.	R. A. P.
						6,313 2 4
4	Subedars { 2 1st Class	100 0 0	15 0 0	115 0 0	230 0 0	
	{ 2 2nd „	80 0 0	15 0 9	95 0 0	190 0 0	
4	Jemedars { 2 1st „	35 0 0	7 8 0	42 8 0	85 0 0	
	{ 2 2nd „	30 0 0	7 8 0	37 8 0	75 0 0	
16	Havildars	*17 0 0	5 0 0	22 0 0	352 0 0	
16	Naiques	*13 0 0	5 0 0	18 8 0	296 0 0	
100	Privates	*12 0 0	†3 0 0	15 0 0	1,500 0 0	
1,940	Syces	*10 0 0	‡3 0 0	13 0 0	13,520 0 0	
						16,248 0 0

* Special rates: the pay of these ranks in a Regiment of Native Infantry being—Havildar, Rs. 14; Naiques, Rs. 12; Privates, Rs. 7; Syces, Rs. 6.
† The extra batta of a private is Rs. 1½.
‡ The extra batta of a syces is Rs. 2.

Statement showing the Monthly Expense of one Division—*continued.*

Number.		Pay.	Batta.	Total of each.	Total.	Grand Total.
		R. A. P.	R. A. P.	R. A. P.	R. A. P.	R. A. P.
	Veterinary Establishment.					22,561 2 4
1	Farrier Major, European ..	*60 0 0	..	..	60 0 0	
1	Native Farrier	40 0 0	..	..	40 0 0	
6	Cattle Doctors, 1st Class ..	30 0 0	† 30 0 0	180 0 0		
2	,, ,, 2nd Class ..	12 0 0	† 12 0 0	24 0 0		
4	Assistant Nalbunds, 1st Class	33 0 0	† 33 0 0	132 0 0		
4	,, ,, 2nd ,,	23 0 0	† 23 0 0	92 0 0		
						528 0 0
	Native Artificers.‡					
1	Head Smiths	40 0 0	5 0 0	45 0 0	45 0 0	
8	Smiths	19 8 0	3 0 0	22 8 0	180 0 0	
1	Head Carpenter	40 0 0	5 0 0	45 0 0	45 0 0	
8	Carpenters	19 8 0	3 0 0	22 8 0	180 0 0	
1	Head Mochee	20 0 0	5 0 0	25 0 0	25 0 0	
12	Mochees	19 8 0	3 0 0	22 8 0	270 0 0	
1	Head Rope Maker	40 0 0	5 0 0	45 0 0	45 0 0	
8	Rope Makers	19 8 0	3 0 0	22 8 0	180 0 0	
8	Bellows Boy	6 0 0	3 0 0	9 0 0	72 0 0	
8	Hammermen	10 0 0	3 0 0	13 0 0	104 0 0	
10	Puckaulies with Bullocks ..	21 0 0	3 0 0	24 0 0	240 0 0	
						1,386 0 0
	OFFICE ESTABLISHMENT.					
	Director's Office.					
1	Head Clerk	250 0 0	..	250 0 0	250 0 0	
1	Clerk	100 0 0	..	100 0 0	100 0 0	
2	,, ...	80 0 0	..	80 0 0	160 0 0	
1	,, ...	60 0 0	..	60 0 0	60 0 0	
1	,, ...	50 0 0	..	50 0 0	50 0 0	
1	,, ...	25 0 0	..	25 0 0	25 0 0	
						645 0 0
						25,120 2 4

* Consolidated, will be rationed by the Commissariat Department.

† Special rates. ‡ Ordinary rates of batta.

Number.			Total of each.	Total.
		R. A. P.	R. A. P.	R. A. P.
3	Dragomans or Moonshies	25 0 0	75 0 0	75 0 0
	2nd in Command Office.			
1	Clerk	120 0 0	120 0 0	..
2	Moonshees	60 0 0	60 0 0	..
1	Peon	8 0 0	8 0 0	188 0 0
	Divisional Captain's Office.			
2	Clerks	70 0 0	140 0 0	..
3	Peons	10 0 0	31 8 0	171 8 0

STATEMENT of Monthly Expenses of Head Quarters and one Division.
Persian Land Transport Corps.
Strength 1,500 Mules.

No. 2.

	Officers.							
1	Director			1,187	0	0	1,187	0	0			
1	Assistant Naval Officer			600	0	0	600	0	0			
1	" Infantry Captain			736	0	0	736	0	0			
1	Lieutenant Staff Officer			805	0	0	805	0	0			
1	Veterinary Surgeon			220	14	0	220	14	0			
										3,548	14	0
	OFFICE ESTABLISHMENTS.											
	Director's Office.											
1	Head Clerk			250	0	0	250	0	0			
1	Clerk			100	0	0	100	0	0			
2	"			80	0	0	160	0	0			
1	"			60	0	0	60	0	0			
1	"			50	0	0	50	0	0			
1	"			25	0	0	25	0	0			
3	Dragomans or Moonshees			25	0	0	75	0	0			
										470	0	0
	2nd Command's Office.											
1	Clerk			120	0	0	120	0	0			
2	Moonshies			30	0	0	60	0	0			
1	Peon			8	0	0	8	0	0			
										188	0	0
	Monthly Divisional Expenses.											
2	Assistant Lieutenant			515	0	0	1,030	0	0			
3	" "			445	0	0	1,335	0	0			
										2,365	0	0
	European Non-commissioned Officers.											
1	Conductor			200	0	0	200	0	0			
2	"			150	0	0	300	0	0			
5	Sub-Conductor			100	0	0	500	0	0			
6	1st Class Sergeants, including Compensation for Ration			66	5	4	398	0	0			
21	" " "			51	5	4	1,078	0	0			
1	Farrier Major			60	0	0	60	0	0			
										2,536	0	0
	Natives.											
2	Havildars			35	0	0	70	0	0			
64	" 2nd Class			28	0	0	1,792	0	0			
1	Farrier Major			40	0	0	40	0	0			
120	Syces and Muleteers			14	5	8	1,722	8	0			
3	Muccadums or Peons			13	0	0	39	0	0			
3	Dhobies			10	8	0	31	8	0			
3	Sweepers			10	8	0	31	8	0			

		R.	A.	P.	R.	A.	P.	R.	A.	P.
	Natives—continued.									
7	Cattle Doctors	48	11	4	200	15	4			
2	,, ,, ...	11	15	5	23	14	10			
10	Puckaulees with bullocks	24	0	0	240	0	0			
8	1st Class Nalbunds	32	8	0	260	0	0			
16	2nd ,, ,, ...	22	8	0	360	0	0			
1	Head Smith	45	0	0	45	0	0			
8	Smiths	22	8	0	180	0	0			
1	Head Carpenter	45	0	0	45	0	0			
6	Carpenters	22	8	0	135	0	0			
1	Head Moochee	25	0	0	25	0	0			
10	Mochees	22	8	0	225	0	0			
1	Head Rope Maker	45	0	0	45	0	0			
6	Rope Makers	22	8	0	135	0	0			
3	Bellows Boys	9	0	0	72	0	0			
8	Hammermen	13	0	0	104	0	0			
2	Head Muceadums	14	8	0	29	0	0			
10	Muceadums	12	8	0	125	0	0			
511	Drivers	10	8	0	5,365	0	0			
								7,150	8	0
								20,699	12	2

Average expense per 100 mules for the Persian Transport Corps .. Rs. 1,380
Average expense per 100 mules for the Abyssinian Transport Corps .. Rs. 1,377

Difference .. .. Rs. 123

A.—STRENGTH of a Division of a Land Transport.

Number.		Captain.	Subalterns.	Subedars.	Jemedars.	Havildars.	Naiques.	Privates.	Syces.	Mules.
1	Squad to consist of	..	..	..	..	..	..	1	12	25
5	Sections each	..	..	..	..	..	1	5	65	125
4	Troops ,, ...	..	..	1	1	4	4	20	260	500
2	Brigades ,, ...	..	1	2	2	8	8	40	520	1,000
1	Division ,, ...	1	2	4	4	16	16	80	1,040	2,000
	Spare Sepoys	..	..	..	..	..	..	20	..	..
	Ditto Mules	..	..	..	..	..	..	..	..	140

B.—ESTIMATE of Pay and Allowance for one Division of Land Transport.

Number.		Total of Each.			Total.			Grand Total.
		R.	A.	P.	R.	A.	P.	
1	Commandant or Director-General							
4	Second in command (say a Major in the Staff Corps, holding a wing, which in itself is nearly Rs. 1,000 per mensem.)	1,200	0	0	1,200	0	0	
1	Staff Officer, if a Subaltern	600	0	0	600	0	0	
	,, Captain	750	0	0	750	0	0	
1	Captain	800	0	0	800	0	0	
2	Lieutenants	525	0	0	1,050	0	0	
4	Subedars	100	0	0	400	0	0	
4	Jemedars	50	0	0	200	0	0	
16	Havildars	22	0	0	352	0	0	
16	Naiques	18	8	0	196	0	0	
100	Privates	15	0	0	1,500	0	0	
1,040	Syces	13	0	0	13,520	0	0	
	Waggon Drivers	12	0	0				
1	Serjeant-Major	60	0	0	60	0	0	
1	Quartermaster-Sergeant	60	0	0	60	0	0	
	Veterinary Establishment for one Division of 2,140 Mules.							
1	Farrier Major (European)	60	0	0	60	0	0	
1	,, (Native)	40	0	0	40	0	0	
6	Cattle Doctors	28	11	4	172	4	0	
2	,, 2nd class	11	15	5	23	14	10	
4	1st Assistant Nalbunds	32	8	0	130	0	0	
4	2nd ,, ,, ...	22	8	0	90	0	0	
	OFFICE ESTABLISHMENTS.							
	Commandant or Director-General's Office.							
1	Head Clerk	250	0	0	250	0	0	
1	Clerk	100	0	0	100	0	0	
2	,, at Rs. 80	80	0	0	160	0	0	
1	,, ...	60	0	0	60	0	0	
1	,, ...	50	0	0	50	0	0	
1	,, ...	25	0	0	25	0	0	
3	Dragomen or Moonshees, at Rs. 25 ..	25	0	0	25	0	0	
	Office Establishment of 2nd in Command.							
1	Clerk	120	0	0	120	0	0	
2	Moonshees	30	0	0	60	0	0	
1	Peon	8	0	0	8	0	0	
	Office Establishment of a Divisional Captain.							
2	Clerks	70	0	0	140	0	0	
3	Peons	10	8	0	31	8	0	

	Artificers (Natives).				
1	Head Smith	45 0 0	45 0 0		
8	Smiths	22 8 0	180 0 0		
1	Head Carpenter	45 0 0	45 0 0		
8	Carpenters	22 8 0	180 0 0		
1	Head Moochee	25 0 0	25 0 0		
12	Moochees	22 8 0	270 0 0		
1	Head Ropemaker	45 0 0	45 0 0		
8	Ropemakers	22 8 0	180 0 0		
8	Bellows Boys..	9 0 0	72 0 0		
8	Hammermen	13 0 0	104 0 0		
12	Puckaulees with Bullocks	24 0 0	240 0 0		

With regard to the above proposed organization, the subjoined Minute was issued by the Governor of Bombay on the 31st of August:—

Minute by the Governor of Bombay in reply to Sir R. Napier's proposal.

"There are several questions of great importance raised by these proposals for the "organization of a Land Transport Corps on the footing suggested by Major Warden.

"The first and chief question is, whether it is desirable to establish the corps on an "independent basis, or subordinate to the Quartermaster-General's Department, or to "leave the Transport Department, as it has been hitherto, under the control and direction "of the Commissariat.

"I have looked carefully into the proceedings of Government when a similar proposal "was made by Colonel Phayre in 1859, and I have also read with attention the Report "of, and the evidence given before, the Committee on the Administration of the Transport "and Supply Departments of the Army, presided over by Lord Strathnairn; and the result "upon my mind is the conviction that the change now proposed would be most impolitic.

"It is true that the Committee propose that the existing system should be changed "in so far as that they suggest the appointment of an officer, who shall be the Head of "the Administrative Departments of the Army, and be responsible for and control all "Departments of Supply, including, besides the Purveyor's, Military Stores, and Barrack "Departments (as regards fuel, light, and straw), the Commissariat and Transport "Departments; but this is not the question now, nor, if it were, should I be disposed to "sanction so radical a change in our Army administration at the moment of entering "into the field.

"The question now raised is the separation of the Transport Service from the "Commissariat, and as to this the Committee emphatically say that army transport should "be placed under one direction and control, to be vested in the officer responsible for "the supply of the Army; and under existing arrangements that officer is the Com-"missary-General.

"I would particularly refer his Excellency the Commander-in-Chief and my col-"leagues to the evidence of Commissary-General Drake, Deputy Commissaries-General "Fonblanque and Bailey, the opinion of Sir J. Hope Grant, the Memorandum of Colonel "M'Murdo, of Sir J. Michel, and of Commissary-General Power, and to Sir H. Rose's "(now Lord Strathnairn's) reports on the French system of transport, referred to by "Lord Elphinstone in a Minute dissenting from a similar proposal to the present, made by the Quartermaster-General in 1859. The present Commander-in-Chief in India, in "another Minute written shortly after, expressed his pleasure that Colonel Phayre's

" proposal for a Transport Department, apart from and separate from the Commissariat, " had been 'upset by the resolution of Lord Elphinstone's Government and the reasoning " of Sir Hugh Rose.'

" I have no difficulty, therefore, in adhering to an opinion which recommends itself " to my own mind, and is supported by such a weight of authority.

" It may be hereafter a proper subject for consideration, and I think it will be, whether " a system such as that recommended by the Committee, should not be adopted in our " Army. There may, on the other hand, be reasons which would make its introduction " into India unadvisable, though it may be advantageous elsewhere. On this I do not " now wish to express an opinion. For the present I should decline to consent to a change " the merits or demerits of which will have to be immediately tested in an Expedition, " the success of which will probably depend far more on the facilities of transport and " supply than is ordinarily the case with an army operating in an enemy's country.

" A further question, however, arises as to the organization of the Land Transport " Service, assuming that it is left, as I think it must, under the direction and control of the " Commissariat. What the amount and character of that organization ought to be is a " most difficult question, but I must confess that it appears to me that the scheme " proposed by Major Warden is more elaborate and more complicated than is required, or " indeed than is advisable. I believe that just such an organization, under special officers " as shall suffice to secure that, for whatever service the Commissariat may require them, " there shall always be forthcoming a sufficient strength of healthy animals, well cared " for and well equipped, with proper attendants to drive them, feed them, take care of " them and their equipments, with packers, &c., to load them, is what we want; and any " more complete and elaborate organization will tend only to establish it as an inde- " pendent service, which is *exactly* what I desire to avoid, and to remove it from the " direction and control of the Commissariat.

" I think it would be sufficient, therefore, to put the Transport Service under one " officer, who should be the Director-General (in the present instance Major Warden), " who would be assisted by a sufficient staff in the proportion of not less than one staff " officer to every 2,000 mules, or equivalent of 2,000 mules, besides a small establishment " for returns, correspondence, &c. The establishment of divisions appears to me un- " necessary, and likely to produce difficulties and confusion where fractions of divisions " may have to be employed. The whole Force should be divided into troops of 100 " mules (or their equivalent of camels or other animals as employed) under the command " of a native officer; and a superior native officer should have the inspection of every " five troops or 500 mules. Under this system the Head of the Commissariat will " indicate what transport he requires for any service, and the Director-General will see " that the necessary transport under its proper officers is provided; but when provided, " the direction and command of it will rest with the Assistant-Commissariat Officer " appointed for the particular service by the Commissary-General, and who will be " responsible to him for the custody, delivery, storage, or distribution of the stores or " supplies entrusted to him.

" A question is raised by Major Warden as to the employment of muccadums, in " whose place he suggests that we should employ privates of the native army. He says " that better experience in the Crimea has convinced him that it is desirable to substitute " some other class for the muccadums. I do not know whether he refers to a failure in " the service of Indian followers in the Crimea, if any such were employed, or only to men " holding a similar position. Be that as it may, I fancy that the facilities for desertion " in Abyssinia will not be great. A more formidable objection to Major Warden's proposal

" is the doubt expressed by those who have had much experience of this class of men and " of Commissariat service in India, whether the syces will be found to take service " willingly except under the system with which they are acquainted, which places them " under muccadums whom they know and who understand them. Of the validity of this " objection I am unable myself to judge; but in this particular also I am fully convinced " that it is not desirable to hazard a change at the very moment of commencing a " campaign, and thus staking the efficiency of our land transport, on which our whole " success may depend.

" A further question arises as to the propriety or necessity of enlisting the men " employed in the Land Transport Corps; and on this subject I find Sir Wm. Mansfield " expressed a strong opinion that, in case of an Anglo-Indian force being sent for opera- " tion on land out of India, ' a military transport train, organised for the special purpose, " ' and composed of enlisted men, under regimental officers, should be put on foot by the " ' Commissariat.' He adds, ' such an organization should be a *sine quâ non* in a foreign " ' expedition.'

" I am aware that an opinion is entertained by experienced officers that it would be " found that the class of men required for these duties would be found unwilling to " enlist; and that the proposal is therefore impracticable. But I cannot but think that " the promise of an adequate and liberal pension, in case of death, or being incapacitated " while on service, would be found a sufficient inducement for the men to enlist tem- " porarily for the Expedition; and to enlist them longer I do not think would be desirable. " A greater difficulty may perhaps be found on its being necessary to obtain the sanction " of the Government of India, or of the Secretary of State, to an enlistment on such " conditions. I will only add that the question whether the men are enlisted or not, " is one of secondary importance.

" As regards the equipment of the corps, this is a matter so entirely departmental, " that I have only to say that, subject to the opinion of his Excellency the Commander- " in-Chief, as to the best form, &c., of the equipments, no time should be lost in providing " them. The Director-General should immediately obtain authorised patterns of the " saddles, harness, packs, carts, &c. An estimate of the quantity required should be " submitted for sanction, and tenders invited by the Commissary-General, or their con- " struction commenced in the Government Departments forthwith."

These views were replied to in the following Minute by Sir Robert Napier, dated the 9th September:—

Minutes by Sir R. Napier.

" I do not think the time is appropriate for any discussion as to the Department " under which the Land Transport should be placed, and I accept without hesitation his " Excellency's decision to place it under the Commissariat.

" I believe that the success of systems depends more on the men who work them " than on the systems themselves.

" But I cannot accept without protest a decision to throw such a body of men as the " drivers of our transport animals will be, if we get them, on an expedition in a foreign " country, without a very complete organisation, to secure order and discipline.

" There may be Egyptians, Arabs, Persians, and Hindustanis, or Abyssinians mixed " up together, and without more organisation than the ordinary one in the Commissariat " Department, nothing but confusion would ensue, the people of the country would be " plundered and ill-treated, and all our efforts at conciliation defeated.

" The Commissariat Department have had but a small quantity of their own carriage

"to manage; the greater portion has been hired carriage, managed under a kind of social "organisation peculiar to itself, which has existed from time immemorial, and which goes "on somehow, one hardly knows how; but this is very different from the large body of "drivers who must now be engaged, and for whom a regular system of control must be "instituted.

"I understand the scale of establishment proposed by Major Warden and the "Quartermaster-General resembles generally that which was formerly instituted in the "Presidency for the Persian expedition. Admitting that the numbers are very great, I "shall be prepared to try any reasonable reduction which may be proposed by a Com-"mittee composed of Lieutenant-Colonel Holland, Deputy Commissary-General, Major "Warden, and any other officer appointed by Government to consider the question."

These remarks were commented on in the subjoined Minute by the Governor on the same day:—

Minute by the Governor of Bombay.

"His Excellency is under a misapprehension, if he supposes that I should wish the "organisation to be nothing more than the ordinary one in the Commissariat Department. "I expressly said that Major Warden should have a sufficient staff of officers under him, "and if the proportion of one to each 2,000 mules is not enough, I am quite willing that it "should be increased. I should think that the appointment of one European officer to "each 1,000 would be ample, but on this I am quite willing to waive my own opinion. "There are two things only to which I feel a great objection: 1st. That the Force should "be organised in a shape that shall make it an independent corps, instead of being "a corps subordinate to the Commissariat; and 2nd, to devolve on a Committee the "decision of a point which we can very well settle without the intervention of any such "body."

The reply to this was given in a Minute by Sir Robert Napier, dated the 11th September:—

Minute by Sir R. Napier.

"As his Excellency the Governor objects to the appointment of a Committee to "prepare a scale of establishment for the land transport, I conclude that his Excellency "will appoint some officer or other person to do so.

"I have, therefore, only to request that, when any definite form of establishment is "resolved on, I may be favoured with an opportunity of offering an opinion upon it, "which, considering how large a share I shall have in the use of it, and how much the "credit of this Government will be affected by its success or failure, his Excellency in "Council may think desirable.

"It may be as well to note that I was quite unaware that the question of the "Department to which the Land Transport should belong had already been discussed in "this Presidency, and that the official traditions of the Government were adverse to "the Quartermaster-General's Department having charge of it; had I been informed of "this, I should not have permitted the proposal to be made in that form.

"The superintendence mentioned in the Government Resolution does not appear to "me to meet the requirements of the case, as far as I can judge of it."

Resolution of the Government of Bombay on the organization of Land Transport.

The result was the following Resolution of the Bombay Government, dated the 12th September:—

"There are several questions of great importance raised by these proposals for the "organisation of the Land Transport for the Abyssinian Expedition.

"The first and chief question is, whether it is desirable to establish the corps on an "independent basis, or subordinate to the Quartermaster-General's Department, or to "leave the Transport Department, as it has been hitherto, under the control and direction "of the Commissariat.

"His Excellency in Council has reviewed carefully the proceedings connected with a "similar proposal made by the Quartermaster-General in 1859, and the opinion of this "Government was expressed in Resolutions of 30th September, 1859, and 9th June, 1860. "His Excellency in Council has also had the advantage of perusing the evidence given "before the Committee on the Administration of the Transport and Supply Departments "of the Army, presided over by Lord Strathnairn. That evidence is uniformly confirma- "tory of the previous decision of this Government on the question now again raised of the "separation of the Transport Service from the Commissariat. The Committee emphatically "say that army transport should be placed under one direction and control, to be vested "in the officer responsible for the supply of the Army; and under existing arrangements "that officer is the Commissary-General.

"Sir William Mansfield, in 1860, expressed his pleasure that the proposal for a "Transport Department apart from and separate from the Commissariat had been 'upset "'by the resolution of Lord Elphinstone's Government, and the reasoning of Sir Hugh "'Rose.'

"His Excellency in Council has therefore no hesitation in deciding that the "transport shall be under the same general direction as the Department of Supply.

"The 5th to the 12th paragraphs of the Quartermaster-General's letter treat of "the internal organization of the Transport Corps, and his Excellency in Council thinks "that the scheme proposed by Major Warden is more elaborate and complicated than is "desirable. He conceives that it would suffice to place the transport under one officer as "director (in the present instance Major Warden), who would be assisted by a sufficient "staff, with a suitable establishment of clerks. A proportion of one European com- "missioned officer to 1,000 mules (or their equivalent) will probably be sufficient at first. "The whole Transport Force might perhaps be advantageously divided from the first into "troops of 100 mules (or their equivalent), under the command of a native officer; and a "superior native officer should have the inspection of, say, five troops, or 500 mules; "but at present the more complicated organization in divisions appears unnecessary, "and likely to produce difficulty and confusion where fractions of divisions may have to be "employed; and it would seem preferable to leave the further development of internal "organization to be made as circumstances and experience may indicate. Under this "system the Head of the Commissariat will indicate what transport he requires for any "service, and the Director-General will see that the necessary transport, under its proper "officers, is provided; but when provided, the direction and command of it will rest with "the Assistant-Commissariat Officer appointed for the particular service by the Com- "missary-General, and who will be responsible to him for the custody, delivery, storage, "or distribution of the stores or supplies entrusted to him.

"A question is raised by Major Warden as to the employment of muccadums, in "whose place he suggests the employment of privates of the Native Army. He says "that experience in the Crimea has convinced him that it is desirable to substitute some "other class for the muccadums. Major Warden particularly mentions that the muc- "cadums in the Crimea, on small provocation, deserted with the men under them. The "facilities for desertion will not be great in Abyssinia, and the existing system seems "to be approved by many who have had much experience, and his Excellency in Council "thinks it unadvisable to hazard such a change at the moment of commencing a campaign.

"The 13th paragraph of the Quartermaster-General's letter relates to the enter-"tainment of a cooly corps, which it has since been determined to obtain from Bengal.

"The 14th paragraph relates to draught transport, and the remarks on this subject "have been superseded by separate action.

"The 16th paragraph refers to equipments. Subject to the opinion of his Excel-"lency the Commander-in-Chief as to the best form, &c., of these, no time should be "lost in providing them.

"The 17th to 22nd paragraphs refer to the immediate organisation of the Head-"quarter Transport Establishment, which should now be undertaken without further "delay by Major Warden, under the general direction of the Commissary-General, in "accordance with the views above expressed. The Commissary-General will keep his "Excellency the Commander-in-Chief informed of the detailed arrangements made under "these orders.

"The Commissary-General should consult the Inspector-General Medical Depart-"ment, on the subject of sick carriage, as noticed in the last part of the Quartermaster-"General's letter."

Land Transport placed under the Commissariat Department.

The Land Transport Corps, having been, by the above resolution of the Bombay Government, placed under the Department of Supply, it was, with that department, placed under the direction of the Commissary-General when in India, and on arrival in Abyssinia under a Controller of Supply and Transport, whose duties were defined, as follows, by the Bombay Government:—

Controller of Supply and Transport appointed. His duties.

"As the duties and responsibilities of the office of Controller of Supply and "Transport are in some respects new in function as well as in name, his Excellency in "Council gives the following instructions:—

"The Controller will be the agent of the Commander-in-Chief in the field for all "that concerns supply, transport, provisions, and clothing not supplied direct from the "Clothing Department, and for communication with the Marine authorities in respect of "requisitions touching sea transports.

"Regarding land transport, the Controller will arrange, under the instructions of "the Commander-in-Chief and in communication with the Commander-in-Chief and the "Quartermaster-General, as regards strategical considerations, and the nature of the "country, the quantity and description of all transport to be maintained, apportioning it "according to the wants of the various Services, and being responsible for its organisation "and efficiency, as well as for its economic and judicious working. The number and "material of the Transport Establishment will be constantly checked by the Controller by "means of musters and inspections, of which periodical returns should be furnished to the "Commander-in-Chief. The organization of local auxiliary transport and its incorpora-"tion with the regular transport will be an important duty of the Controller.

"Recommendations for promotion in the Transport Corps will be made on the "same principle as in the rest of the army. The Director of the Train will submit the "promotions to the Controller for the approval of the Commander-in-Chief.

"The Controller will exercise, under the authority of the Commander-in-Chief, "immediate direction over the departments concerned in supplying the troops with pro-"visions, forage, fuel, and light. The collection of supplies, the economical application of "local resources, the formation of depôts and reserves, the arrangements for custody, "preparation, and distribution of food for man and beast, will be performed under the

"general direction of the Controller, who will keep the Commander-in-Chief informed of "the state of such supplies.

"The Controller will authorize, with the sanction of the Commander-in-Chief, "subject to the confirmation of Government, all expenditure, in what department soever, "not provided for by Regulations.

"The Controller will be responsible that all accounts, returns, and other documents "required by the existing system be duly rendered by the officers of the departments "under his control.

"The Controller will submit to Government all demands from what department "soever, for supplies from India.

"The Controller will report to Government all extraordinary sanction of expendi- "ture of money and stores, laying copies of his reports to Government before the "Commander-in-Chief.

"In taking up immediately the position of Controller of Supply and Transport of "the Abyssinian Force, Lieutenant-Colonel Holland, Deputy-Commissary-General at "Bombay, and nominated by the Government to fill the post of Controller, must "not interfere with the function and authority of the Commissary-General; and his own "function until departure of the Force will be restricted to organization of the field "arrangements and such general cognizance of all preparations as will enable him to "keep his Excellency the Commander-in-Chief perfectly informed, together with the duty "of communicating to Government his Excellency the Commander-in-Chief's wishes in "connection with these preparations."

The Home Government approved of the Controller being the channel of submission for demands of supplies from England, as well as from India, on the understanding that the Commander-in-Chief of the force was to be responsible that the supplies indented for were such as were actually required for the use of the Expedition. Power was, however, reserved to the Controller to act, in case of emergency, in the absence of the Commander-in-Chief.

Establishment.

The Establishment engaged for the Office of the Controller of Supply and Transport was as follows:—Head clerk, rs. 250; 2nd clerk, rs. 200; 3rd clerk, rs. 150; 4th clerk, rs. 120; 5th clerk, rs.100; Peons (4, at rs. 10 each), rs. 40.—Total per month rs. 860.

Composition of Land Transport proposed by the Commissary-General, and sanctioned by Government.

The composition of the Land Transport Corps was now proposed by Lieutenant-Colonel Dunsterville, the Commissary-General of the Bombay Army, and the Government Bombay approved of the following plan for its organization.

The establishment for every 2,000 animals, was fixed at 1 captain, 2 subalterns, 4 chief inspectors (European non-commissioned officers), 1 to every 500 animals; 8 second inspectors (native non-commissioned officers), 1 to every 500 animals; 16 head muccadums, 1 to every 100 animals; 80 second muccadums, 1 to every 25 animals; 1 driver to every two animals; 2 weighing men, and 6 beggarees.

It was calculated that if the number of animals with the force amounted to 20,000 mules or pack bullocks, and 8,000 camels, the officers required would be 14 captains and 28 subalterns.

Collection of animals in the Bombay Presidency.

At this time the following number of animals and followers were being collected in the Bombay Presidency:—At Poona, 1,000 ponies, 4,000 pack bullocks, 1,800 muleteers, 1,600 camel drivers, and 560 dhooly bearers. At Kurrachee, 200 dhooly bearers. At Deesa, 100 camelmen, 30 muleteers, and 200 dhooly bearers. At Belgaum, 50 muleteers, and 100 dhooly bearers. At Bombay, 300 camelmen, and 200 muleteers. From the Madras

Presidency 500 dhooly bearers were expected. 7,600 camel equipments, 3,000 mule and tattoo equipments, 4,000 pack bullock equipments, 100 camel puckals, and 300 mule puckals, were being made up at this time in the Bombay Presidency for the Transport Corps.

Pay of Establishment fixed.

Lieutenant-Colonel Dunsterville fixed the following rate of pay, with warm clothing, free rations on leaving India, and return passage for the Land Transport establishment:—

Chief inspectors	at Rs. 120	per month
Second inspectors	„ 80	„
Weighing men	„ 30	„
Head muccadums*	„ 15	„
Second muccadums	„ 12	„
Camel drivers	Rs. 10 each per month.	
Muleteers		
Pack and draft bullock drivers		
Pony drivers		
Syces†		
Dhooly bearers		
Beggarees‡		
Peons§		

Artificers' Establishment.

The entertainment of two sets of artificers' establishments was also sanctioned, each of the following strength, one to proceed with the Force about to embark, and one to remain at Poona:—

8 First assistant nalbunds‖ ..	at Rs. 33	each per month.
13 Second assistant nalbunds ..	„ 22	„
1 Head smith	„ 45	per month.
8 Smiths	„ 22	each per month.
1 Head carpenter	„ 45	„
6 Carpenters	„ 22	„
1 Head mochee	„ 25	„
10 Mochees¶	„ 22	„
1 Head rope maker	„ 45	per month.
6 Rope makers	„ 22	each per month.
8 Bellows boys	„ 9	„
8 Hammermen	„ 13	„

Office establishment for Director.

The Director of the Transport Train was authorized to entertain the following Office Establishment:—

1 Head clerk	at Rs. 250	per month.
1 Second clerk	„ 150	„
1 Third clerk	„ 100	„
1 Fourth clerk	„ 80	„
1 Fifth clerk	„ 60	„
1 Moonshee	„ 50	„
1 Naique** of peons	„ 12	„
4 Peons	„ 10	„

The Commissary-General was of opinion that considering the very liberal staff allowance of the officers under Major Warden, and the nature of the duties to be entrusted to them,

* Muccadums—Supervisors. † Syces—Grooms. ‡ Beggarees—Labourers. § Peons—Office servants.
‖ Nalbunds—Farriers. ¶ Mochees—Workers in leather. ** Naique—Corporal.

it was not at all necessary to allow them any office establishment, as he thought that in field service the correspondence ought to be as little as possible, and whatever there might be could be conducted by the officers themselves.

The payment of the followers was to be made in the presence of officers, the acquittance rolls being prepared by their inspectors, but to be initialled by the officer before whom the payment might be made.

It was admitted that amongst such a mass of followers, collected from all parts of the world, and of various creeds and castes, some organization was indispensable, and that it was a matter of serious import, considering the peculiar service, and in a comparatively unknown country, far distant from India, how this was to be accomplished.

Lieutenant-Colonel Dunsterville stated that he was of opinion that placing this heterogeneous mass entirely under military organization, as was attempted with the Persian Land Transport Corps, would not answer; but he thought that by a careful selection of the officers and subordinates, allowing the followers (camelmen, muleteers, &c.) to choose their own second muccadums, and, above all, kind treatment combined with firmness, would in the end prove efficacious.*

Early in October, Sir Robert Napier was allowed the opportunity of inspecting the Land Transport Corps, when he wrote the following demi-official letters to the Governor of Bombay:—

Sir Robert Napier's letter of 5th October suggesting modification in the above establishment.

"I have inspected the Land Transport Corps, and regret to say that I am convinced "that, in its present disjointed state, it would utterly fail to answer its purpose.

"I have received the Commissary-General's demand for non-commissioned officers, "European and native, and will take the best measures to procure them from the Army; "but the great fault, besides the want of the principle of order and discipline, which the "military element will produce, there is a great gap between the second inspectors and "the head muccadums, representing 80 and 15 rupees a-month respectively. The lower "grades are not of character and responsibility to be capable of fulfilling the duty of "managing the mules and mule drivers that will often be detached under their charge; "and there is no class that will be able to teach them and their subordinates the proper "care of their animals and their equipments; nor is there sufficient guarantee that "the mules' food, which will be under their care when detached, will be properly applied.

"Intermediate grades are required to connect the chain of responsibility, on "sufficient pay to secure respectable native non-commissioned officers, who can bring "with them a knowledge of the care and treatment of cattle; non-commissioned, about "40 rupees, and privates of the best class about 20 rupees.

"I shall be glad if your Excellency will sanction this proposal.

"The men, when selected, to be conveyed here at Government expense. I have no "doubt the Madras Cavalry, the Nizam, and Mysore, will give good natives; and the "Cavalry regiment here; and Madras, and the Bays, will probably send us Europeans.

"I have instituted inquiries on these points by telegraph.

"It is of the greatest consequence to have farriers, and for them we must pay about "40 rupees, in addition to regimental pay. A veterinary surgeon is very necessary here, "to inspect mules at the last moment, to prevent any glanders from getting on board."

Sir Robert Napier's demi-official letter of the 7th October was as follows:—

Sir Robert Napier's demi-official letter of the 7th October

"I have now gone very carefully into the detail of the Land Transport Corps, and

* Letter from Lieutenant-Colonel Dunsterville dated the 20th of September, 1867, and sanctioned by Bombay Government Resolution of 28th idem.

"would propose, for your Excellency's consideration, the following modification of the "establishment, which I have discussed with Colonel Dunsterville and Major Warden.

"Instead of the amended establishment of—

4 Head Inspectors,
8 Second Inspectors,
16 Head Muccadums,

"I would propose—

Mules, 2,000	..	4 Head Inspectors, at Rs. 120 each. 4 Second Inspectors „ 80 „
„ 200	..	10 Third Inspectors „ 40 „
„ 100	..	20 Head Muccadums „ 20 „

"The Cavalry should be most looked to to supply these men, as they would bring "with them a knowledge of tending and managing cattle; but any men found with "such qualifications would be taken from any branch of the Army, and they would soon "teach the others, who now must come, in many cases, quite ignorant of such duty, "but, if properly taught, may make very good drivers.

"The soldiers will still remain soldiers, and return to their regiments hereafter.

"Their service and regimental character are guarantees for good behaviour, which "are wanting in many cases now.

"I attach very great value to the superintendents of 200 and 100 mules, as they will "have many opportunities of doing good or harm when detached, as they must often be. "When on detached parties, the opportunities of appropriating the food of the mules, of "overloading with their own accumulations, &c., will be very frequent, and I attach more "value to these classes than to the second inspectors even.

"It is desirable to have a portion of spare men in cases of sickness; and desirable "some kind of clothing should be given,—a jacket of some sort,—which should be of "uniform colour, that a mistake may be distinguished at once.

"I am quite sure that Major Warden requires a second, under any name that may "be considered suitable; but the extent of his charge requires that he should have some "one to carry on his work in case of temporary disability.

"I give great credit to Colonel Dunsterville and Major Warden for their exertion "in collecting the establishments. Their exertions have been very great and laudable. "It requires that the establishment be seen, to fully appreciate the absolute need of "complete supervision and organization, to render of real value the expenditure "incurred."

Sir Robert Napier's views, as noted above, were also represented officially on the 11th October, by the following letter from the Controller of Supply and Transport, to the Secretary to Government:—

Sir Robert Napier officially requests modifications in establishment.

"The Commander-in-Chief, after due consideration of Colonel Dunsterville's pro- "posal for proceeding in the formation of the Land Transport Establishment, and after "a careful inspection of the portion of the establishment already embarked, begs to "recommend the following establishment for a division of 2,000 mules:

"2. Instead of that previously proposed of, viz.:—

" 4 Head Inspectors	at Rs.	120	each.
" 8 Second „	„	80	„
" 16 Head Muccadums	„	15	„

" His Excellency recommends—

" 4 Head Inspectors	at Rs.	120	each.
" 4 Second "	"	80	"
" 10 Third "	"	40	"
" 20 Head Muccadums	"	20	"

" 3. The Commander-in-Chief has stated his reasons for these proposals in his demi-official letters to his Excellency the Governor, of the 5th and 7th of October; and his Excellency desires me to say that he considers that the addition of these grades under any denomination that his Excellency the Governor may prefer, is indispensable to the efficiency of the Land Transport.

" 4. The Commander-in-Chief begs to refer to the third Article of the decision of Lord Straithnairn's Commission, in which it says 'the whole of the Army Transport 'organised by the Government should be of a military character under military 'subordination, but all the officers should have military command limited to their own 'corps, and should not be employed on any duty unconnected with transport.'

" 5. The muccadum—regarding whom his Excellency the Governor relies on Colonel Dunsterville's long experience—a valuable person when he is procurable, is the result of the Indian patriarchal constitution of carriers of all descriptions; and by virtue of his connections or the possession of a large share in the ownership of the animals he employs, he obtains sufficient influence to ensure the fidelity and obedience of his working fellows, and often has means of giving compensation if they fail.

" 6. But such a class of muccadums who could be relied upon to see to the care of the animals when detached, is not to be found amongst the new establishment.

" The drivers and the head muccadums are collected from different quarters, and are disconnected with each other.

" The guarantee for good service which is to be found with the soldier from his hopes of pension and his regimental character are wanting; as is also the principle of strict obedience to orders.

" 7. The establishment which has been engaged will no doubt prove very valuable when instructed in their work and under proper superintendence, but without the addition which is recommended, the greatest confusion and misfortune may be anticipated.

" 8. An officer who served in Bhotan writes as follows :—

Experience in Bhootan.

" 'At the last moment—the moment when it was most necessary to strike a blow—we could not have moved, because our carriage transport broke down; the attendance with them was insufficient.'

" On receiving the sanction of his Excellency the Governor in Council, his Excellency the Commander-in-Chief will at once cause the necessary military subordinates to be drawn from the ranks of the British and Native Army, taking them as much as possible from the Cavalry branch to secure a knowledge of the care and equipment of the transport animals, in which they will be able to instruct the untrained subordinates who must necessarily form part of the establishment raised under such an emergency."

Government sanctions modification.

These requests were sanctioned on the 15th October, by the Government of Bombay, and volunteers for the Transport Train were called for accordingly from the ranks of the Army, in the latter end of October, by the following memorandum, from the Adjutant-General of the Bombay Army.

Volunteers called for from the Army.

The non-commissioned officers of the Native Army selected for this service were borne as supernumeraries in their respective regiments, until return from field service, when they were to be absorbed as vacancies occurred.

This plan could not be adopted in the case of British regiments, as the War Office Regulations did not admit of an excess of non-commissioned officers being borne on the established strength of regiments; it was therefore arranged that European non-commissiond officers should resign their rank during the time they held appointments in the Transport Train.

Native regiments giving volunteers for the Transport Train were recruited up to the number of men thus withdrawn.

"To Divisions and Brigades.—Memorandum.—The services of 40 serjeants of Royal "Horse and Field Artillery and Cavalry are required for the Land Transport Corps in "Abyssinia. They must be of a superior class, of good education, particularly as regards "keeping accounts.

"They will receive a consolidated salary of 120 rupees per mensem.

"2. The services of 40 non-commissioned officers of Garrison Artillery, European "Infantry, and Native Cavalry and Infantry, are also required.

"Of these men the Europeans should be able to keep accounts, and have a very fair "knowledge of reading and writing. Natives should possess a similar knowledge in the "Vernacular.

"Salary (consolidated) 80 rupees per mensem.

"3. Further there are required 100 men on a consolidated salary of 40 rupees per "mensem, to be selected from privates of European Artillery, Cavalry, and Infantry, and "non-commissioned officers of Native Infantry.

"Also 150 privates of Native Infantry, on 20 rupees per mensem. These men must "be able to read and write sufficiently well to enable them to keep daily Rolls of their "men, the Europeans in English, and natives in the Vernacular. Candidates must be of "good character.

"4. All ranks will receive rations in addition to the consolidated pay, wear their "regimental clothing, and receive warm clothing and equipment.

"5. Service with the Transport Train to reckon towards good conduct pay and "pension, under existing Regulations.

"6. *Promotions* will be made in the Train, as vacancies occur, from grade to grade, "by selection, according to character.

"7. As regards non-commissioned officers of British regiments they will have to "resign their regimental rank, retaining the same as 'honorary' while with the Transport "Train.

"8. The consolidated pay is to include all good conduct pay in possession, or to "which they may become entitled, but, as privates of their respective corps while with the "Train, they must claim any good conduct pay they may, while so serving, become "entitled to; this will be recorded with their corps, so that when they rejoin they may at "once commence to receive the full rate of good conduct pay.

"9. 'Honorary' non-commissioned officers, on returning to their batteries and "corps, will be entertained as supernumeraries of their grades on gunner's or private's "pay, and will be absorbed as vacancies occur in the rank they held on quitting, and will "be placed in their proper battery or regimental position as if they had been continually "present.

"10. Time-expired men may be permitted to prolong their service under the con-"ditions of the 5th Clause of the Enlistment Act of 1867, and their services be made "available for the Transport Train, under the conditions above stated.

"11. Volunteers for the Transport Train are not required to take their regimental "arms or accoutrements with them."

On the system of organization shown at page 249, the Land Transport Corps was conveyed in detachments to Abyssinia, under the following officers:— Officers of the Land Transport Corps.

Controller of Supply and Transport ..	Lieut.-Colonel H. W. Holland, Staff Corps.
Director of Transport	Major R. P. Warden, Staff Corps.
Second in Command	„ T. Nuttall, Staff Corps.
14 Captains of Divisions, each Division to comprise 2,000 animals	Captain G. C. Bartholomew, 10th Foot.
	„ R. Annesley, 10th Foot.
	„ W. L. Twentyman, 18th Hussars.*
	„ H. Waring, 2nd Queen's Royal Regiment.
	„ F. P. Bartholomew, Staff Corps.
	„ E. Boyle, 96th Foot.
	„ C. M. Griffith, Staff Corps.*
	„ O. W. Yonge, Staff Corps.
	„ C. M. McInroy, Madras Staff Corps.
	„ L. A. M. Graeme, 102nd Foot.
	„ W. H. Beaumont, 102nd Foot.
	„ C. M. Ducat, Staff Corps.
	„ T. F. Bainbridge, Bengal Staff Corps.*
	Lieutenant A. G. Ross* „ „
28 Subalterns	Captain J. S. Hand, 82nd Foot.†
	„ Roddy, V. C. Bengal Army.
	Lieutenant Chalmers, Bengal Staff Corps.
	„ Gaselee, 93rd Regiment.
	„ Ryves, Bengal Staff Corps.
	Lieutenant T. T. Hodges, 76th Foot.‡
	„ E. S. R. Carnac, 19th Hussars.
	„ W. W. Edwards, 8th Madras Cavalry.
	„ F. J. Mortimer, R. H. Artillery.
	„ W. S. Daniell, 105th Foot.
	„ H. Coghlan, 21st Hussars.
	„ F. J. Caldecott, R. H. Artillery.
	„ C. Sturt, 6th Bombay N.I.
	„ J. D. Clark, Madras Cavalry (Paymaster).
	„ A. E. Pearse, 76th Foot.
	„ F. M. Onslow, Madras Gen. List.
	„ J. B. Hennell, Staff Corps.
	„ W. Luckhardt, 109th Foot.
	„ D. du M. Gunton, 96th Foot.
	„ B. W. Faulkner, 95th Foot.
	„ H. de P. Rennick, 21st Foot.
	„ M G. Gerard, Royal Artillery.
	„ N. E. Carr, 10th Foot.
	Cornet C. A. de N. Lucas, 2nd Queen's Bays.
	Ensign A. D. Strettell, 109th Foot.

* Commanded Divisions of the Highland Train in Abyssinia.
† Nominated in Abyssinia to the command of the Highland Train.
‡ Nominated afterwards Inspecting Officer Highland Train.

CHAPTER XXVIII.

LAND TRANSPORT.—OPERATIONS IN ABYSSINIA.

Shortly after his arrival at Zula, on the 27th January, Lieutenant-Colonel H. W. Holland, the Controller of Supply and Transport, made the following official Report to Sir Robert Napier:—

Report by Controller of Supply and Transport, on his arrival, on the Land Transport in Abyssinia.

"Having assumed the functions of my office as Controller of Supply and Transport, "Abyssinian Field Force, I have the honour to submit for your Excellency's considera- "tion a few remarks, which only, at the present time, I am able to offer, reserving for a "future date, after I have acquired a further insight into the state of things generally "in the departments over which I have control under your Excellency's orders, any other "remarks I may have to make.

"2. Of the Commissariat Department I have little to say; its organization is most "creditable to Lieutenant-Colonel Lucas and his officers, and it is satisfactory to know "that their exertions and labours, under most unprecedented difficulties, have met with "your Excellency's approval.

"3. The circumstances under which so small a supply of provisions, &c., have as yet "reached the front are, as your Excellency is aware, owing entirely to the shortcomings "of the Transport Train, but my suggestions, which have met with your Excellency's "approval, for placing exclusively at the disposal of the Commissariat Department a cer- "tain portion of carriage, which that department will be unfettered in the use of, will, I "trust, remedy the existing evil.

"4. Of the Land Transport Train I wish I could speak favourably; but its organi- "zation, which was imperfect in India, has not, in my opinion, improved since its trans- "fer to Abyssinia; and admitting fully the difficulties under which the organization of "the corps was undertaken, I respectfully submit that more favourable results than those "realized might have been effected.

"5. Major Warden being absent, I defer till his return submitting any more detailed "report on the Transport Train. There are many points on which, as yet, I have been "unable to obtain reliable information, but it is hoped some correct and satisfactory "return of the number of animals in possession of the train may be forthcoming on "Major Warden's return from his present tour, for I admit I am fairly startled at the "deficiency between the number at present shown in the returns and what have been landed "here, which leads to the conclusion that our casualties have been most extraordinary.

"6. With reference to the camels supplied for the use of the army under arrange- "ments made by the political authorities, many of these animals were from the first unfit "for service, as the large proportion at present sick at Kumayli proves. Of these latter, "many are positively useless, and the retention of them, in the hopes of their being of "service to us hereafter, is, as I submitted to your Excellency at Kumayli, on the "25th instant, altogether undesirable; the additional care and supervision of useless "cattle being a tax upon our already overworked departments and establishments, which "the existing pressure will not for a moment admit of.

"7. Your Excellency, having found it necessary to depute Captain Willoughby to

"Egypt, on special duty, has placed me at a serious disadvantage, it having been "arranged, with your Excellency's concurrence, in Bombay, that Captain Willoughby "was to be my Assistant in Abyssinia. Your Excellency's permission, however, since "granted, for this officer to return from Egypt, on the completion of the duty assigned "to him, will relieve me of the serious anxiety which I at present feel in the supervision "of the duties of my office, especially in the control of the Transport Train; but I am "quite prepared, in accordance with your Excellency's lately expressed wishes, to show "due consideration for the difficulties of Major Warden's position, and to give him every "encouragement in carrying out the duties devolving upon him."

Correspondence connected with Land Transport devolves on Quartermaster-General's Department.

On the arrival of the Head-Quarters of the Force at Zula it was decided that the orders of the Commander-in-Chief connected with Land Transport should be issued by the Quartermaster-General's Department; and it consequently devolved on Captain Holland, Assistant Quartermaster-General, who had throughout the campaign the charge of his Department, at the Head-Quarters of the Force, to reply to the above Report, which he did in the following letter, dated Senafe, 1st February:—

Reply to the Controller's letter.

"In acknowledging receipt of your memorandum, dated Zula, 27th January, 1868, "I am directed by the Commander-in-Chief to make the following remarks:—

"The deficiencies of the Land Transport Corps are the cause of delay in the advance "of the Force, and the rapid melting away of the stock of camels and mules requires most "serious consideration. It must be remembered, however, in justice to Major Warden, "that that officer was not a free agent in the first formation of the corps, but acted in "obedience to the orders of the Commissary-General, Bombay; he subsequently had no time "to collect sufficient officers and non-commissioned officers, and those that were sent were "not of his own choosing. Again, Major Warden had nothing to say to the difficulties "occasioned by the arrival of the mules from Suez, before there were proper arrangements "made to receive them, or to the misconduct of the Egyptian muleteers, and it will doubt- "less be in your recollection, that when his Excellency referred you to Government for "information regarding mules and muleteers from Persia, the Military Secretary to "Government requested you to telegraph to the Persian Gulf.

"The necessity of pushing up the first body of troops at any sacrifice, the hetero- "geneous materials of which the first detachments of Land Transport Corps landed at Zula "consisted, the variety of languages, want of interpreters, and consequent difficulty which "officers of the corps had in communicating with their subordinates, prevented any effectual "attempt being made to carry out the plan of organization which had been determined on.

"For a month previous to Major Warden's arrival, Sir C. Staveley had been en- "deavouring to infuse some order into the corps, scattered over a line of 60 miles; and "when Major Warden assumed the direction, no doubt much had been done to establish "and provision the depôt, and to correct the misconduct of the muleteers. The officers, as "a rule, exerted themselves beyond all praise; but, inexperienced in their duties as they "doubtless were, it was not to be expected that they would be able to cope satisfactorily "with the extraordinary difficulties they had to contend against.

"Considering the dates on which the first batches of mules were landed at Zula, "the date on which detachments of the Land Transport Corps were despatched from "Bombay (none having arrived between the landing of Colonel Field's Force and the "arrival of the steam transport 'General Havelock' with Captain Twentyman's small "detachment), his Excellency does not think that it was possible to expect any other result "than what occurred; and he considers that Major Warden cannot be held responsible for "shortcomings with which he had nothing to do.

"On assuming the direction of the Land Transport Corps, all these difficulties stared

"him in the face; and the disadvantages under which the corps laboured, owing to its first "disorganization, were materially increased by the scarcity of water and the ravages of the "epidemic.

"Owing also to the deficiencies of the postal arrangements, information regarding "the depôts at out-stations was difficult to be obtained, and mules were left for days "without grain or forage.

"The Commander-in-Chief has thought it only fair to Major Warden to place on "record these difficult points, in order that that officer may be freed from all responsi- "bilities regarding the shortcomings of the Land Transport Corps in Abyssinia previous to "his arrival at Zula, and that due indulgence may be made for his not at once estab- "lishing order and organization in the corps after he assumed direction of it. It is neces- "sary, in fact, to discriminate between the evils which Major Warden could or could not "have remedied. His Excellency awaits with anxiety your next Report on the subject, and "feels sure you will, as far as possible, correct the deficiencies and remedy the defects of "the Land Transport Corps.

"The magnitude of the establishment is almost beyond the power of control of a "single individual, but at the same time it requires the general superintendence and "executive experience of an officer of standing and authority to enable him to meet "promptly all exigencies. To assist you in this onerous and responsible duty, his Excel- "lency relinquishes the almost indispensable services of Captain Willoughby, now employed "on special duty in Egypt, as Sir Robert Napier feels that the success of the campaign "mainly depends upon the efficiency of the Land Transport Corps.

"His Excellency trusts, therefore, that this object will supersede all other considera- "tions, and he feels assured that no exertion will be wanting on your part to bring about "so desirable a result.

"Sir Robert Napier is aware that the charge of the Land Transport Corps is a very "onerous one, and his Excellency is anxious to relieve Major Warden of part of it as soon "as he can see his way to do so."

Working of the Corps in Abyssinia.

The working of the Land Transport Corps was so intimately connected with the march of the Force through Abyssinia, that all arrangements in connection with it have been given in considerable detail, and will be found in the preceding chapters, describing the operations of the Forces from October, 1867, to June, 1868.* The Reports at the end of this chapter, framed at Sir Robert Napier's desire by Captain Holland, give other particulars on the working of the Corps, and on the different descriptions of animals, the saddles used, &c.

Egyptian drivers sent back.

On the arrival of Sir Charles Staveley at Zula, the drivers of the Transport Train who had been collected in Egypt, and from want of other hands necessarily retained in Abyssinia, were found to be so worthless, that as far as possible they were sent back to Egypt, and their places filled by men collected from India. There was some excuse for the Egyptian drivers, as they had been sent without warm clothing or cooking utensils, and from a dearth of interpreters were unable to understand the orders addressed to them.

Highland Train formed.

On the 28th January the Punjab mule trains, which had arrived at Zula during that month, were ordered up to Senafé, held distinct from the rest of the Transport Train, and formed the nucleus of a special train which worked on the highlands and accompanied the Army to Magdala. This Highland Train was originally organized under the orders of the Commander-in-Chief by Captain Holland, Assistant Quartermaster-General, and placed under the immediate charge of Captain J. S. Hand, who carried out the organization, and had control over it till the end of the campaign. It was formed on a different principle from the Transport Train organized at Bombay, and was composed of the Rawul Pindee, and Lahore Trains, and the A and D Divisions of the Bombay Train. The establishment

* See pages 325, 332, 333, 346, 351, 359, 380, 398, 399, 401, 402, 405, 406, 412, 432, 433, 439, 440 of Vol. I, and pages 3, 6, 12, 16, 17, 19, 73, 84, 85, 86, 87, 91, 93, 107, 110 and 177 of Vol. II.

allowed for each division will be found in Captain Holland's Report at page 687. A Commissariat camel division of the Transport Train was also organized towards the end of the campaign. See Chapter XXIV.*

Inspecting Transport Officer appointed.

An inspecting Transport Train officer was appointed on the 8th March; his duties were to inspect all posts, convoys of animals, sick depôts, &c., on the line of march between Senafè and Magdàla.

Sick depôts.

Depôts for sick mules were formed along the line of march at Kumayli, Focada, Antalo, and Dildi. These depôts were each placed under an officer specially selected for the post, to whom a veterinary-surgeon, when available, was attached. Places were selected for depôts on account of grass and water being obtainable, and general instructions were given to keep at these depôts all mules likely to become again serviceable, while those not likely to recover within a month were sent to Zula.

Maltese carts.

Besides pack animals, Maltese carts were kept working between the sea coast and Senafè, and latterly as far as Adigrat. These were each drawn by two mules. The carts supplied from Bombay also worked along the same line; they were each drawn by two Goozerat bullocks. Arrangements at different times were made for the conveyance of stores by means of the carriage belonging to the people of the country; and mules were purchased in Abyssinia, and camels in the Soudan, to supplement the casualties in the Transport Train during the autumn and winter of 1867; and deficiencies were provided for by additional animals being ordered: 1,000 camels and 1,000 mules from Egypt, 1,500 camels, 1,000 pack bullocks, 1,000 ponies, and 2,000 donkeys from Berbera.

The following Statement shows the number and description of animals received into the Transport Train from the beginning to the end of the campaign †:—

Total number of animals received into the Transport Train.

From whom, and whence received.	Mules.	Ponies.	Camels.	Draught Bullocks.	Pack Bullocks.	Donkeys.
Obtained from Bombay	430	941	..	1,079	4,597	..
„ „ Suez	10,045	..	‡741	..	..	1,902
„ „ Hodeida	..	..	446	..	..	141
„ „ Berbera	..	3	..	..	2,121	149
„ „ Punjab	2,627					
„ „ Calcutta	141	182				
„ „ Bagdad	1,188	250				
„ „ Bushire	400	84				
„ „ Muscat	..	..	..	..	..	289
„ „ Hussán Ali (Camel Contractor)	..	..	7,495			
Total landed at Zula	14,831	1,460	8,682	1,079	6,718	1,831
Purchased by Mons. Münzinger	..	..	707			
„ „ Mons. Otto Reil (Suakin) ..	..	..	408			
„ „ Mr. Hausmann	..	..	2,023			
„ „ Mr. Reade	..	..	188			
„ on the Highlands	2,720					
„ at Zula	21	12	..	..	654	
„ at Senafè	389					
Total purchased	3,130	12	3,326	..	654	
Grand total received (Exclusive of 44 Elephants) ..	17,961	1,472	12,008	1,079	7,372	1,831

* For particulars as to the establishment, cost, and comparative cost with a camel division of the regular Transport Train, see page 178.

† From a Return dated the 14th August, 1868, furnished by the Director, Transport Train.

‡ Taken over by the Commissariat Department.

The following Report, compiled by Captain Holland, Assistant Quartermaster-General on the 25th of May, 1868, from the Reports of officers of the Highland and Lowland Trains will show the general working and organization of the Transport Trains and the efficiency of the different description of transport animals employed.

Report by Captain Holland on the working of the Land Transport Train in Abyssinia.

"The Transport Train was organized by the Bombay Government, under the "authority of Bombay General Orders dated 12th September and 15th of October, 1867, "on the following establishment for every 2,000 animals :—

"ESTABLISHMENT.

Establishment of each division.

	Pay per Mensem. Rs.		Pay per Mensem. Rs.
1 Captain, with full regimental pay, and Staff pay of	500	8 Smiths	22 each.
2 Subalterns ditto ditto ..	300 each.	1 Head carpenter	45 "
4 Head Inspectors, enlisted men ..	120 "	6 Carpenters	22 "
4 Second ditto ditto ..	80 "	1 Head saddler	25 "
10 Third ditto ditto ..	40 "	10 Saddlers	22 "
20 Fourth ditto ditto ..	20 "	8 Bellows boys	9 "
80 Muccadums	12 "	8 Hammermen	13 "
1 Driver to every 2 mules	10 "	1 Head ropemaker	45 "
2 Weighing men	30 "	6 Ropemakers	22 "
4 Weighing coolies	10 "	4 Chief farriers	40 "
1 Head smith	45 "	20 Farriers	30 "

"In addition to these, several muleteers were sent from Aden, Persia, Suez, &c., on "various rates of pay, and 17 interpreters.

"On the 13th of February, 1868, a Pay Clerk was sanctioned for each division.

Transport Train divided into two portions, Lowland and Highland.

"On the 14th of February, 1868, the Transport Train was divided into two portions "—the Lowland and Highland Trains: the former to work from Zula to Senafe (63 "miles), the latter from Senafe to Magdala (317 miles). The working of the whole Train "was also, on the above date, placed under the Quartermaster-General's Department.

"The direction of the Lowland Train was placed in the hands of Major Warden, "Bombay Staff Corps, with a Second in Command, a Staff Officer, a Paymaster, and a "Quartermaster; and worked under the immediate control of Lieutenant-Colonel "Holland, the Controller of Supply and Transport.

"The direction of the Highland Train was given to Captain Hand, 82nd Regiment, "working under the immediate control of the Assistant Quartermaster-General at Army "Head-Quarters.

Organization of Lowland Train.

"The organization of the Lowland Train, with the exception of increasing its "strength materially in officers, was not altered in Abyssinia. It consisted of three "divisions of mules, three of pack bullocks, three of camels, and one of carts, making in "all ten divisions.

Organization of Highland Train.

"The Highland Train was organized on an entirely different principle, and worked "quite independently of the Lowland Train. It consisted of four divisions: two from "the Punjab, and two from the Bombay Presidency, of 2,000 mules each; but the full "number of mules to complete these divisions was never obtainable.

"The organization of each of the four divisions of the Highland Train was as "follows :—

"STRENGTH OF EACH DIVISION OF 2,000 MULES.

	Pay per Mensem. Rs.	Establishment of each division.
1 Captain	120	
3 Subalterns	80	each.
4 European Inspectors, selected from British regiments	120	,,
20 Jemedars, or troop Serjeant-Majors	25	,,
80 Duffedars, or Serjeants	15	,,
667 Muleteers (that is, 1 to every 3 mules)	12	,,
2 First-class farriers	33	,,
10 Second-class farriers, for Bombay Division only	23	,,
1 Smith	30	,,
10 Assistant smiths	25	,,
1 Saddler	45	,,
10 Assistant saddlers	18	,,
10 Bheesties, or water-carriers	12	,,
1 Salootrie, or Native veterinary surgeon	40	,,
1 Native writer	40	,,

Stabling, watering, and line duties.

"Each division of the Lowland and Highland Trains was divided into troops of 150 "mules each. Stables, watering, and all other line duties, at fixed hours, were conducted "with the same discipline, and in precisely the same routine, as in Indian Cavalry "regiments. The muleteers were trained and drilled to their work, and kept in as strict "a state of discipline as possible. The Jemedars kept nominal rolls of each man in "their troops, and also pay accounts. Long rolls of every man were kept by the Captain "of the division.

Highland Train.

"The Highland Train was under the control of a Sub-Director, who reported direct "to and received his orders from the Assistant Quartermaster-General at Army Head-"quarters. Its Staff consisted of a Staff Officer, who conveyed the orders of the "Sub-Director to Captains of Divisions, and carried on the general office duties of "the Train; and an Inspecting Officer, whose duty it was to ride up and down the "line over which the Train worked, and to report to the Assistant Quartermaster-"General at Head-quarters on all convoys, mules with regiments, and Transport Train "stations.

Efficiency of Highland Train.

"On the above system the Highland Train worked well. It accompanied the Army, "conveying its baggage, ammunition, and hospital stores, tents, &c., from Senafé to "Magdála; and all Commissariat supplies for the Force from Atsala to Magdála. It "also brought back to its original starting-point all the above-mentioned stores, the "mules having arrived, as a rule, in fair condition.

Relative value of different descriptions of transport.

"During the long and difficult march the Army had to Magdála and back again, "opportunities occurred of testing the relative value of the different descriptions of "transport, and more especially of mules brought from Spain, Egypt, India, Persia, and "those purchased in Abyssinia.

Spanish mules.

"The Spanish mules with the Force were large, and generally ill-bred. They "appeared naturally of a weak constitution, and seemed more fit for draught work than "the duty on which they were employed on the Highlands. They also appeared unable "to bear great changes in climate, and suffered more than any other mules from want of "a sufficiency of food. They required a great deal of grass, and the dry and coarse "forage generally obtainable did not appear to afford them sufficient nourishment. "When once in low condition it was very difficult to bring them round again, even with

"rest and grazing. There were in the Highland Train a few well-bred Spanish mules. "These throve and worked well, but generally they were of the worst description of mules "in the Force for loads. They, however, answered admirably for draught purposes on "the made road between Senafè and Adigrat, when well fed and looked after. With "irregular feeding, however, they did not answer even for this purpose.

"Between Senafè and Adigrat there was little or no difficulty in providing proper "food for these animals, and consequently in draught on this line they did excellent "service in conveying heavy weights.

Persian, Indian, and Egyptian mules.

"The Persian, Indian, and Egyptian mules were more enduring than those "from Spain. They required less grain, ate every description of grass, and throve upon "it. When the Army was encamped before Magdāla, all the Transport Train animals had "for some days to work hard, with water at a distance of six miles, and forage and grain "very scarce. The Spanish mules fell off in condition rapidly; whereas the Persian, "Indian, and Egyptian showed comparatively little change. The difficulties of the road "crossing and recrossing the Bashilo and Jedda rivers, however, were most trying to all,

Abyssinian mules.

"enervated as they then were, and many succumbed. The Abyssinian mules were "not enduring; they were in good condition and fresh when purchased, but they broke "down under hard work in larger numbers than any others.

Causes of sickness amongst mules and ponies.

"The Veterinary Officers who marched with the Force to Magdāla considered the "chief causes of sickness and casualties amongst the mules and ponies were hard work at "great altitudes, constant exposure with want of rest, insufficiency of food, bad quality of "grass, irregularity in feeding, as well as galls owing to bad saddles, want of time and "means for repairing the same, and, in several cases, carelessness in saddling and loading. "The mules and ponies of the Transport Train had moreover scarcely a fair start, for "they were generally put to work the day after disembarkation, when they had been for "some weeks in a ship, between decks, in a tropical climate.

Sick depôts.

"Sick depôts for animals, under the charge of specially selected officers, were kept "up on the line of march, and were found to answer well.

Pack ponies.

"Pack ponies were very useful; in some cases as good as mules. With Otago "saddles, they proved well adapted for carrying loads in a country like Abyssinia. The "mortality among them was not very great. The best pack ponies received were the "hill ponies from India.

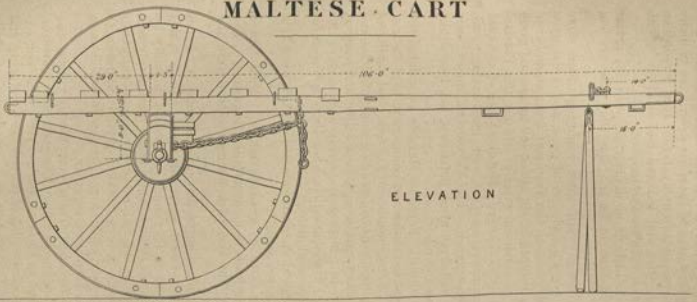
Leading or driving pack animals.

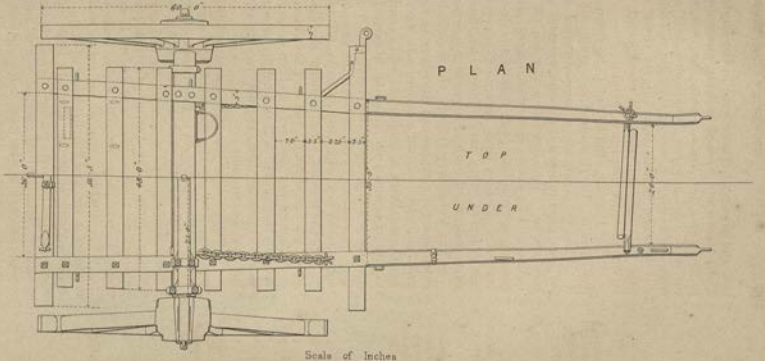
"Opinions differ regarding the advisability of leading or driving pack animals. From "our experience in this campaign, the driving system answered best; and if mules "and ponies were taught to follow each other, which they might be without difficulty by "tying a bell to the neck of the leading animals, they would proceed more freely and "better than when three or more are tied together and led, especially over mountainous "zigzag tracks. The system of tying animals to one another proved injurious to "themselves, their saddles, and loads. If, however, mules are driven, a mounted man "should accompany every four or five mules to keep them together.

Donkeys.

"The donkeys imported for use in the Transport Train were mostly young, and "inferior in size and breed. Many of them were knocked up, The good ones, however, "did very well in carrying with ease loads equal to those of mules. If loads not ex- "ceeding 100 lbs. were put on donkeys, they worked well, and proved most enduring and "valuable animals. They do not require much food or care, and one driver can easily "take charge of five or more. No donkeys under four years of age should be used "for pack purposes. One or two thousand additional donkeys, with drivers accustomed "to them, would doubtless have been useful, and would have proved a valuable acquisition "to the Transport Train.

MALTESE · CART





Scale of Inches

Lith. at the TOPL DEPOT of the WAR OFFICE
PRINTED BY JAMES W. ELLIS

"Pack bullocks did not answer well, and were the worst description of transport in Abyssinia. They were apt to run wild and go off the road in search of forage, and endless delay occurred in bringing them back into the right track again. They were incapable of making a long march under a hot sun, and suffered much from want of water. They were liable to sore backs, which did not easily heal, and soon fell off in condition, if a sufficiency of food was not always obtainable for them. Experienced drivers are essentially necessary with pack bullocks, and these were not easily procurable. Pack bullocks.

"The camels bought for the Transport Train were not generally of the quality necessary for a long and wearisome journey. Many were young and weakly animals, hardly fit to carry loads of 100 lbs. The Aden camels were the worst, and died in great numbers. Egyptian camels, and the picked animals from Berbera, were the best; but all had apparently been underfed, and the casualties among them were consequently great. Camels are most valuable as carriage, but are delicate, and means of doctoring them should always be at hand. Young camels should never be selected for pack purposes, and one driver is essential to every two camels on a campaign. Camels.

"The draught bullocks imported from India did their work efficiently. They, however, required abundant food and great care, and did not thrive well in cold or wet climates. Draught bullocks.

"Two descriptions of carts were sent to Abyssinia—one for bullock and the other for mule draught. The former answered well, and were very useful on the made road between Zula and Adigrat. They were not, however, equal to the Maltese carts drawn by mules, which were peculiarly well adapted for Abyssinia, and travelled over almost any road a little broader than their axles. The cart division of the Transport Train was invaluable from the beginning of February, when the road between Zula and Senafè was practicable for cart traffic. Carts.

"Forty-four elephants were landed in Zula from Bombay, and did good and efficient service.* They were at first employed in carrying Commissariat stores from Zula to Kumayli, and afterwards sent up to the front for the purpose of conveying the Armstrong battery, 8-inch mortars and equipments. They carried the mortar battery complete from Zula to Magdāla, and the Armstrong guns, carriages, limbers, ammunition, &c., from Antalo to Magdāla, over an extremely difficult and mountainous country.† It was often no easy matter to provide them with suitable forage; and to this deprivation, as well as owing to the distance they had to go for water at Magdāla, may be attributed the death of five of these animals. The remaining thirty-nine carried the Armstrong and mortar batteries over the same difficult road, from Magdāla to Antalo, and the mortar battery to Zula. Elephants are slow movers over a mountainous country, and are apt to get foot-sore. It is, moreover, not always easy to obtain for them their proper forage in such a country as Abyssinia. They, however, did their work well in carrying, as they did, loads varying from 8 to 16 cwt. each; and without them it would have been impossible to have taken the heavy guns and mortars to Magdāla, unless very considerable delay had taken place in making roads fit for wheel carriage.‡ Elephants.

"The strength of the Transport Train employed in Abyssinia was as follows:— Strength of the Transport Train.

* For information regarding the general health, ailments, treatment, care, and diet of elephants, see pages 226 to 230.

† For elephant equipment, see Chapter X., page 360.

‡ For detailed information of the difficulties overcome by the elephants in Abyssinia, see pages 13, 40 and 98, Chapters XIV., XVIII. and XIX.

LOWLAND TRAIN.

	1st January.	1st February.	1st March.	1st April.	1st May.
Officers	14	41	36	69	83
Veterinary Surgeons	4	7	8	11	11
Inspectors	111	338	437	473	486
Interpreters	5	7	10	17	14
Muccadums	272	562	366	651	706
Drivers	2,355	6,601	5,838	7,532	7,728
Artificers	145	391	458	393	431
Water Bullocks	3	208	224	219	227
Camels	1,739	2,355	4,427	5,797	5,936
Mules	4,280	8,848	3,154	4,034	2,348
Ponies	376	556	1,223	1,896	1,666
Donkeys	..	..	..	752	1,791
Draught Bullocks	257	493	584	1,048	1,282
Pack Bullocks	619	976	3,874	6,102	5,943
Mule Carts	14	191	249	305	305
Bullock Carts	100	176	222	345	396

Aggregate number of Animals.

"The aggregate number of animals was as follows, in the whole Train:—

1st January	7,274
1st February	13,406
1st March	18,898
1st April	26,509
1st May	26,883

Casualties.

"The total casualties, up to the 1st May, were 6,920 animals.

"The strength of the Highland Train was as follows:—

	14th February.	1st March.	1st April.	1st May.
Officers	19	18	20	20
Veterinary Surgeons	1	3	4	4
Inspectors	20	14	14	14
Jemedars and Duffedars	240	400	433	473
Drivers	2,000	2,668	3,028	3,308
Artificers	112	112	115	115
Mules and Ponies	4,507	5,412	6,661	7,690

Strength of Highland Train.

Casualties.

"The casualties in the Transport Train were as follows:—

LOWLAND TRAIN.

	Camels.	Mules.	Bullocks.	Donkeys.
January	102	520	15	..
February	725	394	221	..
March	599	325	261	6
April	804	803	553	17

Lowland Train.

HIGHLAND TRAIN.

February and March	.. .. ..	500 mules.
April		675 „

Casualties to Highland Train.

"In addition to these, 400 mules were given as presents to native chiefs, many "of which were in comparatively good condition; but owing to galls, sore backs, &c., were "disabled, and unfit for further service with the Force.

Drivers. "The drivers sent to Abyssinia for the Train were not as a rule men at all qualified "for the work. Untrained Egyptians, Persians, Turks, and the off-scourings of the "Indian bazaars, formed the principal portion of the drivers of the Train. The only "exceptions were in the cases of the Punjab Train, and the muleteers who had been "working with the mules of the Field Column Carriage Establishment in the Bombay "Presidency. These men were generally well equipped, and accustomed to saddling, "grooming, and looking after their mules both in camp and on the line of march. It is "impossible to overrate the necessity of thoroughly training muleteers to a rigid system "in the care of the animals under their charge on the march, as well as in the lines "previous to their being sent on service. A marked difference was apparent in the "working of the men who were sent without the advantage of any such training, and "of those who had marched with their mules from Rawul Pindee to Kurrachee, a distance "of one thousand miles, prior to embarkation, or those who had been accustomed to "march with the Field Column Carriage in the Bombay Presidency. There was little "or no difficulty in disciplining the muleteers sent from India. They were generally "cheerful and willing, and if those under whose command they served took the trouble "to teach them their duty, and though strict were not over harsh with them, they soon "became good drivers.

"For an efficient mule-train in a campaign such as this, men should, I think, be "enlisted, and thoroughly trained as muleteers prior to embarkation. A Transport "Corps composed of such men, lightly equipped and armed, so that it might travel "independent of escorts from the regular army, would, I believe, be a most useful corps "in a campaign.

"It would perhaps be worthy of consideration whether a Transport Train Depôt "might not be formed in India, regularly organized and officered on any principle "considered best, from which, in case of war, the nucleus of an efficient Train might be "drawn.

"I believe also that a Transport Train would be more efficient if it did not consist "of separate divisions. It has proved in this campaign impossible to keep either officers, "muleteers, or mules exclusively with the divisions to which they originally belonged; "and as a rule officers or their subordinates do not take the same interest in trans-"port establishments of other divisions as they do in those belonging to their own.

"On the long line of march traversed by the Army in this campaign, Transport "Train depôts, at stations about 75 miles distant from each other, with officers to receive "charge of and issue mules, were established. This plan answered well, but would, I "consider, have succeeded even better if the officers and muleteers of the Train had all "been considered as one corps, without being separated into divisions."

Report by Captain Holland on mule saddles.

The following Report dated Zula, 10th June, by Captain T. J. Holland, Assistant Quartermaster-General, on the different descriptions of mule saddles and pads used by

the Force during the march to and from Magdāla, with sketches, shows the relative merits of each.

Description of saddles.

"The following saddles and pads have been used by the Force for mules:—

"*Saddles.*

"The Otago.
"The MacMahon.
"The Hungarian.

"*Pads.*

"Punjab.
"Bombay Ordnance.
"Bombay Commissariat.
"Egyptian.
"Persian.

The Otago saddle.

"The Otago saddle weighs 43 lbs., and is admirably adapted for general pack "purposes, when used by properly instructed muleteers; it, however, requires to be "carefully fitted on the animal, and every attention given to adjusting the stuffing of the "pads, so as to prevent any chance of galling.

"The Otago saddles sent to Abyssinia have, as a rule, been too large for the mules "in use with the Force. The breeching, breastplates, buckles, and straps might be "reduced and simplified. Muleteers, unless trained and accustomed to these saddles, "are apt to make mistakes in fastening the straps, &c.

"With very slight modifications, and in proper hands, these saddles ought not to "gall when fitted on the large Spanish mules, but the smaller animals with the force, as "well as those in poor condition, have been frequently laid up with sore shoulders and "hips, on account of these saddles being too large for them.

"Three sizes of Otago saddles have been sent to Abyssinia, of which those of the "smallest pattern have answered best, and saddles of a still smaller pattern would "probably answer better for Indian mules.

Alterations suggested.

"From the experience we have had, the following alterations would appear "advisable in the Otago saddle:—

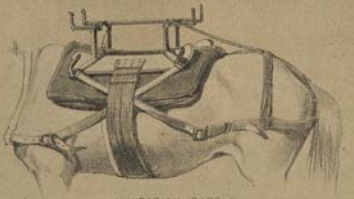
"1. Strong loops of leather might with advantage be substituted for the hooks "from which the loads are suspended and fastened; these loops should be 2 inches higher "on the tree of the saddle on each side than the hooks now are, so as to distribute the "weight of the load more on the animal's back and less on his sides. Nothing fatigues "and distresses a mule more than a badly-packed and loosely hung load, knocking "against his flanks and legs.

"2. A netting, or saleeta, should be furnished to 25 out of every 100 saddles, to "carry miscellaneous articles, small packages, &c.

"3. Breeching and breastplates should be made more simple, buckles and straps "reduced in number, and all constructed so as to fit any sized animal; the present "breastplate and breeching are too long for even the largest mules we have had, and in "most cases cannot be sufficiently shortened.

"4. That part of the pad of the saddle which rests on the animal's shoulder should be "cut out, so as to lessen the chance of galling, and give the shoulders fair play to work "clear of the pads. The same arrangement might with advantage be made in the hinder "part, to prevent the hips from being rubbed. The stuffing of the pad should also be of "softer material, and should project on all sides beyond the leather, the edges of which "are liable to turn in, harden, and injure the mule.

SADDLES & PADS USED BY THE ABYSSINIAN FIELD FORCE.



HUNGARIAN SADDLE.

THE PUNJAB PAD.

THE BOMBAY ORDNANCE PATTERN PAD.

THE BOMBAY COMMISSARIAT PATTERN PAD.

Lith. at the TOPL DEPOT of the WAR OFFICE
Col. Sir H. JAMES, R.E. Supt.

"5. A horse blanket, carefully fitted in the fork of each saddle, is required to "protect the mule from the cold at night, but is not required in saddles provided with "saleetas, as the saleetas can, if made of canvas, be used as horse-cloths.

"The Otago saddles sent to Abyssinia have been very well made, of the best "material, and would, with the modifications above suggested, be the best pack-saddles "for mules yet invented.

"For riding purposes these saddles are not very well suited; the hooks on them are "very much in the way, and, in the event of a fall, are liable to catch the rider's clothes "and, as has occasionally happened in this campaign, cause a bad wound in the leg.

"The MacMahon saddle weighs 66 lbs. with its waterproof sheet, or 56 lbs. without "the sheet. It has many of the advantages of the Otago. The MacMahon saddle.

"Its weight, however, is so considerable that it renders it an inconvenient "description of pack-saddle, especially where, in order to economize the number of "mules, it is a matter of great importance to place as much baggage on each as the "mule can carry with facility.

"A Hungarian saddle, brought to Zula by Count Kodolitsch, one of the Austrian "officers attached to this Force, has also been tested on the march to and from Magdála. "It is a simple light framework of wood and iron, weighing 17 lbs. only, and is placed on "a folded horse-cloth on the back of the mule. It has the advantage of being very "light, and so constructed as not to be likely to cause galls. The Hungarian. saddle.

"It is perhaps as good a description of pack-saddle as there is for carrying two "boxes of an equal weight, but it is not suited for bundles or packages.

"The ordinary Punjab pad is covered with leather, and weighs 34 lbs.; it is in two "pieces, with bands over the back to connect the two portions together. The breeching "and breastplates are of broad leather. The Punjab pad.

"This pad has been found by long experience to be very serviceable, and does not "generally gall mules. In a mountainous country, however, like Abyssinia, it has not "altogether answered well, as there are no means to prevent loads slipping backwards or "forwards when going up or down hill.

"This defect might be remedied by having bamboos lashed on each side, or by "passing straps through eyelet holes in the upper part of the pad. Alterations suggested.

"The Punjab pad is simple and light in construction. Muleteers soon learn how to "fasten it on, and it has on the whole caused less galls than any other pad or saddle in "use with the force. I would recommend it for use all over India, as the lightest, most "serviceable, and economical pad obtainable.

"The following alterations are, however, suggested:—

"1. The felt pads which rest on the mule's back to be covered with some soft cloth.

"2. As it is impossible that the bands connecting the two pads can be made strong "enough for very rough work, it would be advisable to join the pads strongly together by "one band, running the whole length of the saddle.

"3. Eyelet holes to be added to the front and back part of the pad, with a view "of preventing the loads from slipping; a strong piece of double rope sewn on to the "sides of the saddle, with loops left at either end, would answer all requirements.

"The Bombay Ordnance pad is covered with strong sacking, and weighs 26 lbs. It "has not proved at all a good pad; it is too thin to be any protection to the animal's "sides or back, and totally unsuited for hard loads, such as shot and shell, or other "articles that press on one spot. Long marches try it greatly, and more sores and "galls have been caused in this campaign by this pad than by any other. The Bombay Ordnance pad.

"The Bombay Commissariat pad is also covered with sacking, weighs 40 lbs., and is The Bombay Commissariat pad.

"commendable for its simplicity, durability, and the protection it affords to the animal's "back, but it is objectionable on account of its great weight.

"It is, moreover, clumsy and unwieldy, and gets very heavy when saturated with "rain. It, however, has not been found to cause many sore backs in this campaign. "The Bombay Commissariat pads sent to this country have, as a rule, been badly made, "the breeching, breastplates, and girths deficient in strength, and the pads generally "requiring constant repair.

The Persian pad. "The Persian pad is covered with hair sacking; it is thick and rather clumsy, "but it has not been found to gall animals much, and weighs 25 lbs.

"The flap of carpet cloth attached to this pad, and which covers the loins and hind "quarters of the mules, effectually protecting them from the wet and cold at night, is of "great advantage. The Persian pads sent to this country have generally been made of "very flimsy material, and have not stood the constant wear and tear they have had.

The Egyptian pad. "The Egyptian is a high, hard, uncomfortable, and heavy pad, quite unsuited to the "requirements of a campaign. It was found necessary at the commencement of the "operations in this country to condemn all the Egyptian pads sent to Zula.

"From the experience we have had in this campaign, the Otago has proved the most "serviceable of all mule saddles, and the Punjab the best pad.

"I believe that a pad is better than a saddle, as a general rule, for pack purposes, "being more easily repairable, better capable of being fitted to mules of any size, carried "with greater facility to the post from which it is to be used, lighter in weight, and is "simpler, and far more economical in construction; it also affords protection to the mule "at night, which the saddle does not.

"When saddles get out of order they are difficult to repair; the leather which covers "them is liable soon to get damaged when in the hands of muleteers, who, tired with their "long marches, content themselves with simply taking them off their animals, and never "give any attention to keeping them in good order. It would, however, probably be "advisable in a mule train for service in a mountainous country to have a proportion of "saddles as well as pads.

"Sketches of each description of pack saddle and pad reported on are attached."

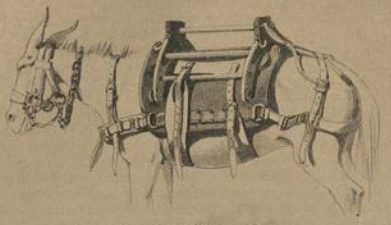
"Having thus reported on all the saddles and pads sent to Africa for the use of "the Force, I would, as a suggestion on this most important subject, offer an opinion "that it appears highly desirable that a better description of pack saddle than any we "have had in use should be introduced into our Transport Trains. All our pack-saddles "have defects which might be remedied, but I cannot help thinking that if we adopted "another description altogether, we might not only save considerable outlay in original "cost, but also be able to reduce the number of muleteers, and at the same time place "heavier loads on our mules. A pad made of leather, of the shape of a large pair "of saddle-bags, filled with straw and girded on the mule with a broad girth, would, I "believe, prove a far better pack-saddle than any we have had on trial in Abyssinia.

"Count Kodolitsch, one of the Austrian officers attached to the Force, who has "served in Mexico, has informed me that such a description of pack-saddle is used by "the Mexicans, and styled an 'apparejo,' each side of it being sufficiently deep to "keep the girth from chafing the belly, and the crupper, attached by wide side pieces, "renders it difficult for the saddle to turn when the load is on.

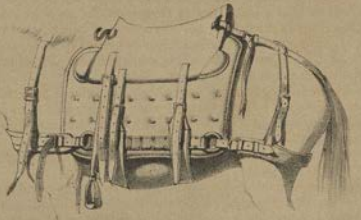
Apparejo recommended. "In Mexico, loading is, I believe, very simply managed. A sling rope is thrown "across the 'apparejo,' and the loads placed on the mule's back, the sling rope being "tied on the top. In Mexico one muleteer is able to attend on the march to eight mules "thus laden.

"The advantages of a pack-saddle of the above description are that, its cost is but

SADDLES & PADS USED BY THE ABYSSINIAN FIELD FORCE.



THE Mc MAHON SADDLE.



THE OTACO SADDLE

THE PERSIAN PAD.

James Ferguson. Lith.

Lith. at the TOPOGRAPHICAL DEPOT of the WAR OFFICE
Under the Direction of COLONEL JAMES C. R.E. 1868

" little, large numbers can be packed in a comparatively small compass, and sent to the " port of debarkation; each mule can carry a spare pack-saddle unstuffed. Repairs can " with facility be effected. Its size distributes the weight of the load over the whole of " the animal's back. It is not liable to turn. It serves as a covering at night for the " mule, and by care and attention in arranging the straw stuffing ought never to cause " galls or sore backs."

Disposal of Transport animals.

On the 21st March, Sir Robert Napier asked the Government of India for information regarding the number of transport animals required in India to complete establishments in the Bengal, Madras, or Bombay Presidencies, in order that arrangements might be made for their embarkation in transports for Bombay or Kurrachee, as soon as the campaign was concluded. To this a reply was received to the effect that Government left the question of what transport animals should be brought back to India to Sir Robert Napier's discretion, elephants and serviceable mules being brought to India, if possible.

Final arrangements.

The final arrangements for the disposal of transport animals were, that all bullocks for whose conveyance Government transports were available should be sent to Aden.

The bullock and mule carts, which could be taken to pieces, and were in fair order, were sent to Bombay.

All the good draught bullocks were also sent to Bombay, as well as all the elephants and serviceable mules for which tonnage was available.

The 5th battery 25th brigade, Royal Artillery, the 10th and 12th Bengal Cavalry, and the 21st and 23rd Punjab Infantry, which had arrived on the shores of the Red Sea with transport establishments, and had lost animals from different causes, and transferred others to the Land Transport Train on the occasions of reduction of baggage, &c., had their establishments completed from the most efficient animals available.

In regard to all animals not considered worth conveyance to Bombay, or those for whom tonnage was not available, an offer made by M. Münzinger, French Consul (also acting English Consul), was accepted. M. Münzinger's offer was to receive charge of any number of animals, and to arrange for their care till he was able to dispose of them at fair prices, charging for watchmen only to look after them and 5 per cent. commission on all he sold.*

* The numbers of animals handed over to Mr. Münzinger will be found in Captain Holland's Report, page 107, Chapter XXI.

CHAPTER XXIX.

CAMP EQUIPAGE, SICK CARRIAGE, TRANSPORT, AND FOLLOWERS.

WHEN the Expedition was determined upon, it was considered necessary that the Force should move with fewer impediments in the shape of camp equipage and baggage, than those allowed by the Indian scale of regulations. The number of tents to which the same number of troops would have been entitled in India was considerably reduced, and those issued were of a lighter description, and the amount of carriage for camp equipage consequently proportionately diminished.

Transport allowed for baggage of troops in India.

In India a Sulleetah,* 6 feet by 4, is supplied at the public expense, to each European soldier, to contain his entire kit on the line of march.

The kit of the European soldier, for which this Sulleetah is allowed, is considered to include his canvas bag, bedding, and necessaries—in short, every article which he is not required by the Regulations to carry on his back when marching; and the weight of such kit, including that of the Sulleetah, is estimated at 75 lbs. for the Infantry, 54 lbs. for the Cavalry, and 50 lbs. for the Artillery soldier.

Camels are supplied in India by the Commissariat Department, at the public expense, for the conveyance of the men's kits on all ordinary movements of troops, in the proportion of one camel to every five infantry or every seven cavalry or artillery soldiers. Married soldiers requiring additional carriage have to make their own arrangements. When troops take the field in India, or proceed on active service, free carriage is allowed for 40 lbs. of baggage to each non-commissioned officer and soldier. Regimental Schoolmasters, and Assistant Schoolmasters, Serjeant-Majors, and Quartermaster-Serjeants of European and Native Regiments, Troop Serjeant-Majors, Brigade Serjeants, and Battery Staff Serjeants with Batteries of Artillery, European and Native, on all occasions of movement, on duty or sick certificate, draw carriage for 164 lbs. of baggage each, or one camel between two men.

Carriage for officers and native troops in India.

When any body of native troops, exceeding 100 men, is moving in India, and difficulty is experienced in procuring private carriage for hire, the civil authorities nearest to the military station whence the troops have to march, provide it on indents countersigned by the Commanding Officer. The subjoined Table shows the weight of baggage considered sufficient for each class. That for European Officers is exclusive of their camp equipage, the carriage for which they are expected to keep complete.

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* "Sulleetah," a piece of canvas or net-work, looped at the ends, to form a bag.

Baggage allowed in India.

	Weight of Baggage.
General of Division	2,880 lbs.
Brigadier	1,920 „
Field Officer	1,440 „
Captain, Surgeon, &c.	960 „
Subaltern, Assistant Surgeon	480 „
Native Commissioned Officer	160 „
Warrant Officer	320 „
Havildar and Hospital Assistant	60 „
Native Rank and File, Bheestees, and Lascars	40 „
Mess for each Officer present	320 „

Reduction of baggage in Abyssinia.

During the Abyssinian campaign this scale of baggage was gradually reduced, until ultimately all ranks of the army marched from Lat to Magdála without any baggage, except what the officers could carry on their chargers, and what the men carried themselves.

Sick carriage.

In regard to sick carriage, the Force left India under Indian regulations, with dhoolies at the rate of five per cent. of strength for European troops, and one per cent. of strength for native troops. This proportion of sick carriage was maintained as long as possible, but was eventually reduced to an uniform rate of one per cent. of strength.

Ambulances.

In India troops on the march are provided with ambulances, in addition to the regulated number of dhoolies, at the rate of 1 to every 100 Europeans, and 1 to every 500 Natives. These carts convey four sitting or two lying. Seven per cent. of hammocks, slung on poles, for Europeans, and one and a half per cent. for natives, were also taken to Abyssinia, as dhoolies were intended only to be used on the plains. Also two per cent. of cacolets for European troops, and four per cent. for natives. Ambulances at the rate of one per cent. for European troops, and one per 500 native troops; and camel saddles (double-seated) at a uniform rate of three seats per cent. for Europeans and natives were also taken, but none of these descriptions of sick carriage were used in the advance on Magdála, on account of the hilly nature of the road and scarcity of forage: they were, however, of some advantage on the return route between Antalo and the coast. Foot-sore and fatigued men were allowed to be conveyed on spare mules at the recommendation of the medical officers. Stretchers were also taken at a uniform rate of two per regiment or one per detached company.*

Entrenching tools.

The carriage for entrenching tools allowed by Indian Regulations, as also the scale adopted for Abyssinia, is as follows:—

	India.	Abyssinia.
Regiment of European Cavalry	4 bullocks.	4 mules.
„ Native „	2 „	2 „
„ European Infantry	3 „	8 „
„ Native „	2 „	8 „

Each Regiment of Cavalry was supplied on embarkation with 16 pickaxes, 16 mamooties† with helves, and also with jungle knives.

Each Regiment of Infantry with 50 pickaxes, 100 mamooties with helves, 12 axes, (felling), 2 crowbars, and jungle knives.

The 23rd Regiment of Pioneers carried the tools laid down for a Regiment of Pioneers.

Troop stores.

Troop stores in India are allowed carriage according to actual wants, not however

* For a description of each article of sick carriage and camp equipage, see the Report at the end of this chapter.

† Mamooties are hoes.

exceeding on field service, per troop, 3 camels, and on ordinary marches, per troop, 1 camel or 1 cart. In Abyssinia the European cavalry were allowed 6 mules per troop for troop stores.

Tents.

Troops from India took with them, for use in the lowlands, the tents authorized by Regulation for marching in India, as well as a supply of Native soldiers' tents, for the highlands. English bell tents were also sent from England for the whole Force.

Officers' tents.

Officers, Regimental and Staff, were allowed to take their own tents for use on the march from Annesley Bay to Senafè, there to be made over to the Ordnance Department for safe custody until again required. European soldiers' tents were, as far as possible, issued as day tents, *on loan*, to those officers who were not able to provide their own camp equipage. All officers were also supplied, *on loan*, with Native soldiers', single-poled, tents.

It was arranged in Bombay that at Senafè the final distribution of tents to officers and troops, British and Native, was to be made as circumstances might dictate; and payment was to be recovered for the tents then issued to officers.*

Public and private followers.

According to the Indian Regulations ten per cent. of private followers are allowed to European troops when embarking in the course of duty, and the same proportion to natives. These were reduced at Bombay to two per cent. of strength for artillery and cavalry, one per company of British infantry; and no private followers were allowed for Native infantry. The Native irregular cavalry, however, were permitted to take to Abyssinia their syces, grass-cutters, barbers, washermen, water-carriers, &c. Conservancy establishments were not taken with corps from India. The followers of officers proceeding to Abyssinia were reduced at Bombay to the following scale.

Staff and Departments.

	Servants.
General of Division	each 8, including Syces.
General of Brigade	„ 6 „
Head of Department	„ 6 „
Field Officer	„ 4 „
Captain	„ 3 „
Subalterns	„ 2 „

The following private followers were allowed on embarkation for the non-commissioned rank and file:—

Artillery	2 per cent of strength.
Cavalry	„ „
British Infantry..	1 per Company.
Native Troops	None.

Reduction of followers in each Corps in Abyssinia.

On the highlands of Abyssinia all followers were reduced. For instance, the 3rd Dragoon Guards landed at Zula with 257 Native followers; this number was reduced to 78. The A and B Batteries 21st Brigade, Royal Artillery, landed with 69 followers each, and their number was reduced to 24. The 4th King's Own and 33rd Regiments landed with 438 and 347 Native followers respectively; their number was reduced to 117 and 113 for each corps, including hospital and water establishments, carriers for sick, &c. The 27th Bombay N.I., Belooch regiment, landed with 151 followers, and this number was reduced to 59. Similar reductions were made in each corps.†

The establishments with which the 5th Battery 25th Brigade Royal Artillery, the 10th and 12th Bengal Cavalry, and the 21st and 23rd Punjab Infantry, left India, and the actual number of followers permitted to embark with officers and men will be found in the Embarkation Returns at the end of Chapter VII.

* For the rates of payment see Chapter V, page 128.
† See pages 62 to 72, Chapter XIX.

The annexed Statement exhibits, in a tabular form, the proportion of public tents, sick carriage, and tent and flag-staff Lascars, which Corps Officers and Departments were permitted to take with them to the coast of Africa from Bombay.

Allotment of Tents, Sick Carriage, and Tent Lascars, sanctioned in Bombay, for Corps and Departments proceeding to Abyssinia.

Tents.

			Tents, European Soldiers', Double-poled, No.	Tents, European Soldiers', Single-poled, No.
For use on the lowlands.	Regimental Officers	Battery of Royal Artillery — For personal use	1	..
		Battery of Royal Artillery — For office and orderly-room	..	1
		Wing of Dragoons — For personal use	1	..
		Wing of Dragoons — For office and orderly-room	..	1
		Regiment of British Infantry — For personal use	2	..
		Regiment of British Infantry — For office and orderly-room	..	1
		Company of Native Artillery — For personal use	..	1 (A)
		Regiment of Native Cavalry — For personal use	1	..
		Regiment of Native Cavalry — For office and orderly-room	..	1
		3 Companies Sappers — For personal use	1	..
		3 Companies Sappers — For office and orderly-room	..	1
		Company of Sappers — For personal use	..	1 (A)
		Regiment of Native Infantry — For personal use	1	..
		Regiment of Native Infantry — For office and orderly-room	..	1
	Staff Officers	Head of Department — For personal use	..	1
		Head of Department — For office	..	1 (B)
		Other Staff Officers — For personal use	1 to each Department.	
	Warrant Officers and Staff Serjeants of Departments.		1 Staff Serjeant's tent between 4.	
			No. of Men to each.	No. of Men to each.
	European Non-Commissioned Rank and File	Horse Artillery	12	7
		Field Artillery and Cavalry	14	8
		Garrison Artillery, Sappers, and Infantry	16	10
For use after leaving Senafe.			Tents, Native Soldiers', Double-poled, No.	Tents, Native Soldiers', Single-poled, No.
	Regimental Officers	Commanding Officers	..	1
		Other Officers	..	1 to 2
	Staff Officers	Head of Department	..	1
		Other Staff Officers	1 to each or 1 to 2	at the option of Officers
		For office use	According to actual requirements	
	Warrant and Staff Non-Commissioned Officers of Departments		..	1 to 2
	European Non-Commissioned Rank and File of all arms		13	..
	Native Non-Commissioned Rank and File of all arms (exclusive of Cavalry, who had to provide their own tents)		30	..

A. And 1 Staff Serjeant's tent for office and orderly-room.
B. For native clerks, native soldiers' tents were allowed according to actual requirements.

Sick Carriage.

For European Troops.	Dhoolies, 5 per cent.	
	Ambulances, 1 per cent.	
	Cacolet Kujawahs, 2 seats per cent.	
	Camel Saddles (double-seated), 3 seats per cent.	
	Mule pads	1 per cent.
	Stretchers	2 per Regiment.
		1 per Wing.
		1 per Battery.
For Native Troops.	Dhoolies	1 per cent.
	Ambulances, 1 per 500.	
	Cacolet Kujawahs, 4 seats per cent.	
	Camel saddles (double-seated), 3 seats per cent.	
	Mule pads	1 per cent.
	Stretchers	2 per Regiment.
		1 per Company of Sappers.
		1 per Company Native Artillery.

Tent and Flag-staff Lascars.

Horse Artillery and British Cavalry		4 Lascars to 100 N. C. Rank and File.
Field and Garrison Artillery and British Infantry		4 " " 112 "
Native Cavalry		2 Lascars per Regiment.
Native	Artillery	2 Lascars to 112 N. C. Rank and File.
	Sappers	
	Infantry	
General Officer Commanding the Force		1 2nd Tindal & 10 Lascars.
General of Division		1 " 6 "
Brigadier		1 " 5 "
Camp Equipage Department, and Reserve		1 First Tindal.
		2 2nd Tindals.
		50 Lascars.

The proportion of Tents, Sick Carriage, Tent Lascars and Transport (Mules) for each Arm, allowed was as follows:—

| | Strength. | | | | TENTS. | | | |

On arrival in Abyssinia, in consequence of the difficulties of obtaining forage, water and supplies generally, as well as on account of the great mortality among the animals of the Transport Train, it was found necessary, as shown in Chapter X, to reduce the establishments with each corps, and on the 21st January, 1868, a General Order was issued by Sir Robert Napier, reducing the amount of camp equipage, carriage, sick carriage, and native followers allowed for each regiment and battery composing the Force to the following scale:—

Scale of camp equipage, as reduced on the 21st January, 1868.

1	Bell Tent	for each Commanding Officer.	
1	„	for every 3 other officers.	
1	„	(single cloth) for every 5 Staff Serjeants or Warrant Officers.	
1	„	„ for every 4 Native Commissioned Officers.	
1	„	„ for 12 European non-commissioned, rank and file.	
1	„	„ for 14 Native non-commissioned, rank and file.	
1	„	„ for Guards for each regiment or battery.	
1	„	„ for Stores for each regiment.	
1	„	„ for Hospital establishment for regiment or battery.	
1	„	„ for Hospital necessary for each regiment.	
2	Tents, Native soldiers'	double-poled, for Hospital for each regiment.	
1	„	„ „ for Hospital for each battery.	
1	Bell Tent,	for Hospital for a company of Royal Engineers.	
1	„	„ for a company of Native Sappers (when detached).	
1	„	„ for a battery of Native Artillery.	

The number of transport animals allowed was reduced to—

Reduced scale of transport, 21st January

1	Mule	for every 2 bell tents.	
3	„	for every 2 Native soldiers' double-poled tents.	
1	„	for the conveyance of each Officer's personal baggage.	
1	„	„ of the mess kit of every 3 Officers.	
1	„	„ of the baggage of every 3 Staff Serjeants.	
1	„	„ of the baggage of every 4 European non-commissioned rank and file.	
1	„	„ of the baggage of every 3 Native Officers.	
1	„	„ of the baggage of every 5 Native non-commissioned rank and file.	
5	„	„ of the cooking utensils of a British regiment.	
1	„	„ of the cooking utensils of a battery Royal Artillery.	
2	„	„ of the Quartermaster's stores of a British Infantry regiment.	
1	„	„ of the Quartermaster's stores of a battery.	
1	„	„ of the Quartermaster's stores of a Native regiment.	
1	„	„ of Office Books of each regiment and battery.	
1	„	„ of Armourer's stores of each regiment.	
8	„	„ of the Entrenching Tools of each regiment.	
13	„	„ of the Hospital stores of a British regiment.	
6	„	„ of the Hospital stores of a Native regiment.	
3	„	„ of the Hospital stores of a battery Royal Artillery.	
1	„	„ of the Hospital stores of a Native battery or company of Sappers.	

2 Mules for the conveyance of the Hospital stores of a company Royal Engineers.
22 „ „ of the spare ammunition of a British regiment.
20 „ „ of the spare ammunition of a Native regiment.
6 „ „ of the spare ammunition of a company of Royal Engineers, or a company of Sappers.

Sick carriage, 21st January.

Hammocks slung on poles (with 4 bearers each) were issued at the rate of 1 for every 20 European non-commissioned rank and file, and 1 for every 100 Native non-commissioned rank and file.

1 Dhooly, with 6 bearers, was allowed to each regiment.

Followers reduced on 21st January.

The only native followers, public or private, allowed to proceed with the troops, after the 21st of January, were as follows, and no extra carriage was permitted for the conveyance of their baggage :—

26 Cooks for each British regiment.
6 „ for a Field Battery of Artillery.
5 „ for a Mountain Train Battery.
3 „ for a Company of Royal Engineers.
Puckaul bheesties according to existing regulations.
Hand bheesties „ „
1 Servant for the mess kit of every 3 Officers.
1 Grasscutter for each Officer's horse.
1 Syce or grass cutter for each battery horse of a Field Battery.
25 Muleteers for each Mountain Train Battery Royal Artillery.
1 Grasscutter for every 2 mules of a Mountain Train Battery of Royal or Native Artillery. 47 Muleteers for a battery of Native Artillery.
3 Artificers for each battery of Royal Artillery, and 7 for Native Artillery.
Regimental and battery Officers were allowed each a soldier servant.

The amount of camp equipage and carriage, and the number of Native private followers allowed to each Staff Officer was as follows :—

Reduced camp equipage for Staff Officers.

1 Bell tent, double cloth, for each Staff Officer in charge of an office.
1 „ „ for every two Staff Officers not in charge of an office.
1 „ single cloth, for every five clerks.
1 „ „ for every 16 public followers.

Reduced carriage for Staff Officers.

1 Mule for every officer's private baggage.
1 „ for the tent of every Officer in charge of an office.
1 „ for the tent of every two Officers not in charge of an office.
1 „ for every two bell tents, single cloth.
1 „ for the mess kit of three Officers.
1 „ for the personal conveyance of two clerks, Commissariat Inspectors or draftsmen.
1 „ for the conveyance of the baggage of four clerks, Commissariat Inspectors, or draftsmen—the baggage of each clerk, &c., being limited to 40 lbs.
1 „ for the baggage of eight public followers, the baggage of each follower being limited to 20 lbs.

Reduced followers for Staff Officers.

1 Servant for each Staff Officer.
1 Grasscutter for each Officer's horse.
1 Servant for the mess of every three Officers.

Staff Officers were allowed the option of having a soldier servant each in lieu of a Native private servant.

The following were the scales of camp equipage, carriage, sick carriage and followers as reduced for field hospitals:— Reduced camp equipage for field hospitals.

3 Bell tents, double cloth, for each field hospital.
1 Bell tent, single cloth, for the hospital establishment of each field hospital.
1 " " for the necessary of each field hospital.
1 " " for every five warrant officers, hospital assistants, apprentices, &c.
1 " " for every 16 public followers.

Reduced scale of transport for field hospitals.

1 Mule, for every bell tent, double cloth.
1 " for every two bell tents, single cloth.
1 " for medicine chests for every field hospital.
2 Mules, for cooking utensils and stationery of field hospital, British troops.
2 " for medical comforts of each hospital.
1 Mule, for fracture apparatus for every field hospital.
1 " for the conveyance of the baggage of every eight public followers, the baggage of each follower being limited to 20 lbs.
1 " for the conveyance of the baggage of every four warrant officers, the baggage of each warrant officer being limited to 40 lbs.

Reduced sick carriage and followers for field hospitals.

15 dandies, dhoolies or hammocks, with six bearers each, and 11 second-class servants were allowed for every field hospital.

The scale of camp equipage, carriage, and followers for Medical Officers with field hospitals, was the same as that allowed for Staff Officers.

Commanding Officers of corps and detachments were ordered to arrange (in communication with the *Transport* authorities) for such spare carriage as might be available to accompany the hospital on the march, for the purpose of receiving the kits of the dhooley bearers when dhoolies or dandies were in use; and Medical Officers were held responsible that this order was duly observed in marches of all detachments of sick under their charge.

On the advance from Senafè to Antalo, the necessities of the Land Transport Train requiring that the amount of requisite transport should be again diminished, a General Order was issued accordingly on the 23rd February, further reducing the amount of Camp Equipage and Carriage, and the number of Native followers to each regiment, battery, or Staff Officer on the highlands. The following was the reduced scale according to this Order:—

Reduced scale of camp equipage, 23rd February.

1 bell tent, double cloth, for every three Officers.*
4 " " for hospital of each regiment of European Infantry.
2 " " for hospital of each regiment of Native Infantry or Cavalry.
1 " " for hospital of every battery of Artillery.
1 " single cloth, for 10 Staff Serjeants or warrant officers.
1 " " for eight Native Officers.

* The two Senior Officers of a Regiment were allowed one tent between them.

1 bell tent, single cloth, for 14 non-commissioned rank and file.
1 „ „ for 18 non-commissioned rank and file.
1 „ „ for the guards of each regiment, European or Native.
1 „ „ for the stores of each regiment, „
1 „ „ for the hospital establishment of each battery or regiment, European or Native.
1 „ „ for office purposes of every 5 clerks.

Reduced scale of transport, 23rd February.

1 mule for every 2 bell tents, single cloth.
2 „ for every 3 bell tents, double cloth.
75 lbs. weight for each officer's personal baggage.
30 „ for the baggage of every warrant and Native Officer.
25 „ for the baggage of every Staff Serjeant or non-commissioned rank and file.
75 „ for the cooking utensils of a company of a regiment of Infantry or battery of Artillery.
150 „ for the Quartermaster's stores of a regiment of Infantry, European.
75 „ for the Quartermaster's stores of a battery of Artillery or a regiment of Native Infantry or Cavalry.
150 „ for the Armourer's stores of each regiment of Infantry or Cavalry, European or Native.
150 „ for the mess kit of six officers.

Transport animals were allowed for entrenching tools, hospital stores, Staff officers' offices, and spare ammunition, according to actual weight, to be specially sanctioned in each case by the Assistant Quartermaster-General at the Head-quarters of the Army.

Reduced scale of sick carriage. 23rd February.

1 dhooly, with 6 bearers, for every hundred non-commissioned rank and file, European or Native.
2 mules, with pads, for every hundred men of a regiment of Infantry, European.
1 „ „ for every hundred men of a regiment of Native Infantry.

Number of followers reduced 23rd February.

No private followers were allowed, except grasscutters for mounted officers' horses, and the only public followers for whom rations could be drawn were the following:—

2 cooks for each company of Infantry (European), or for each battery of Artillery.
Bheesties according to existing regulations.
Hospital establishment „ „
Artificers, troop moochees, regimental saddlers, according to actual requirement, specially sanctioned in each case by the Assistant Quartermaster-General, at the Head-quarters of the Army.
25 muleteers for each mountain train battery of Artillery.
1 tent Lascar to each General Officer or Assistant Quartermaster-General of Division.
1 muleteer for every 3 Land Transport Train mules or Cavalry baggage animals.
No syces were allowed to any regiment of Cavalry or battery of Artillery.
Grasscutters were allowed in the proportion of 1 to every 5 regimental or battery horses.
No Officers were allowed any private carriage whatever.
Every Staff, Regimental, or Battery Officer was allowed a soldier servant.
No civilian clerks were permitted to accompany the Force.

Commissariat Officers were prohibited from issuing rations to any followers, excepting those above-named, unless indents for the same were in the first instance specially countersigned by the Assistant Quartermaster-General at army Head-quarters.

All public and private followers discharged under the operation of this Order were allowed free rations to Zula, and a passage to India or Egypt as required.

General Officers commanding Brigades, &c., for the highlands were requested to order all followers attached to officers and troops under their command in excess of the scale above noted to be sent to Zula at once, and the Brigadier-Generals Commanding at Kumayli and Zula and Officers Commanding at Suru, Undul Wells, and Rahagedi, were held responsible that no officers or troops left the stations under their respective commands for the highlands with extra followers or carriage.

The Commissariat Department at Zula were authorised to detain any public followers discharged under this Order for any department requiring their services.

When the troops arrived at Lat, in order to conclude the campaign before the rains flooded the Suru Pass, further exertions were necessary to enable them to move quickly. The country was barren, the roads were extremely hilly and bad, in fact were mere hill-paths, which the nightly rainfall made slippery and treacherous. It was necessary, in consequence, to reduce the loads of the pack animals to 100 lbs. each, and to sacrifice everything which could possibly be spared to accelerate the movement of the Force. A General Order was accordingly issued at Lat, on the 22nd of March, again reducing camp equipage, baggage, and followers. Under the operation of this Order—

Further reduction of equipage and baggage, on the 22nd March, at Lat.

Single cloth bell tents were only allowed, in the proportion of 1 to every 12 officers, and 1 to every 20 non-commissioned and rank and file. Major-Generals commanding Divisions were allowed a tent each, and Brigadier-Generals 1 tent for themselves and their personal and Brigade Staff.

Hospital tents were allowed to each regiment, battery, or detachment, according to the recommendation of the Principal Medical Officer only; and, with that exception, no other tents were to be taken for any purpose whatever.

No private baggage animals or camp equipage of any description were allowed to follow the column under any pretext whatever.

Carriage was allowed for the cooking pots of officers, in the proportion of 1 mule to every 12 officers.

Under this Order, no baggage mule proceeding with the Force was to carry more than 100 lbs., except in the cases of boxes of small-arm ammunition and tents, when two of each were to be the load; 4 lbs. of grain were carried in addition to the 100 lbs., to complete the day's rations. The cooking pots of batteries and detachments were carried in the proportion of 50 lbs. to each company or troop.

Sick carriage was taken on in the proportion allowed by the Order of the 23rd February. All dhoolies, however, were brought on in the rear of the whole baggage of the brigade.

No further reduction of followers could take place, as there were no private followers to reduce, and only a very few public followers, and these considered absolutely necessary. All that could possibly be spared had been sent back from Zula and Adabaga. The baggage which was discarded was left in depôts at Zula, Senafe, Antalo, and Dildi, and was picked up by the Force as it returned through these places.

The camp equipage and sick carriage with the Force were fully reported upon at the termination of the campaign, by the desire of Sir Robert Napier, by Captain Holland,

Assistant Quartermaster-General at the Head-quarters of the Force. This Report gives information as to the numbers and description of articles of camp equipage and sick carriage supplied, with sketches, the manner in which each was used, and its capabilities for meeting the requirements of such a campaign as that in Abyssinia. His Report was as follows :—

"*Zula*, 1*st June*, 1868.

Captain Holland's Report on camp equipage and sick carriage.

"A full supply of camp equipage and sick carriage was sent from England and India "to meet the requirements of the Force.

"The number and description of tents despatched were as follows :—

"Tents, European soldier, double-poled	155
" European soldier, single-poled	312
" Staff-Serjeants	45
" European hospital	39
" Native soldier, double-poled	863
" Native soldier, single-poled	329
" English circular, double fly	323
" English circular, single fly	676
" Hospital marquees	50

"The sick carriage consisted of :—

"Dhoolies	401
"Ambulances	40
"Kujawahs	247
"Camel saddles	175
"Mule pads	144
"Stretchers	128

"In addition to these, eight swing cots (purchased from the shipping), 128 dandies, "and 2,129 McGuire's hammocks were landed at Zula, for the conveyance of the sick "and wounded.

"Tents of the following description were not taken by the troops on the march; "a few were, however, pitched at the stations in the Suru Pass and at Senafè :—

"Tents, European soldier, double-poled.
" European soldier, single-poled.
" Staff-Serjeants.
" European hospitals.
" Hospital marquees.

"None of these tents were found suitable for mule carriage, and though comfortable "and affording every protection from the sun on the plains, were not of any value to the "Force on its march on the highlands of Abyssinia.

"A few of the Native soldiers, double and single-poled tents, were taken by the Force "as far as Antalo.

"The English circular double fly tents were taken as far as Lat. The English circular "single fly was the only description of tent the Force was able to take as far as Magdàla.

"*Description of Tents.*

Tent, European soldier, double-poled.

"The European soldier's double-poled tent is large and commodious, weighs 631 lbs., "has two flies, each three cloths thick, is 22 feet long by 16 feet broad, and accommodates

" with facility 16 men, giving each soldier the space considered necessary by the Sanitary " Commission in the Bombay Presidency.

" The great objection to this tent on active service is its weight, especially when wet, " the cloths of which it is constructed being of very soft material and liable to absorb a " large quantity of moisture. In rainy weather, moreover, the pitch of the outer fly is " insufficient to prevent leakage.

European soldiers' single-poled tent.

" The European soldiers' single-poled tent is constructed of the same material as the " tent above mentioned; it affords good protection from the sun, weighs 525 lbs., has two " flies, is 15 feet square, and accommodates with facility 10 men, giving each soldier the " space considered advisable by the Bombay Sanitary Commission.

" This tent is more water-tight than the double-poled tent, on account of the outer " fly having a higher and better pitch.

" It is also more suited for service than the double-poled tent, in consequence of its " being lighter and easier to pitch. It was not, however, found sufficiently light for mule " carriage, and has the disadvantage of absorbing moisture to a great extent.

Staff Serjeants' tent.

" The Staff-Serjeants' tent is smaller than, but somewhat similar in shape to the " European soldiers' single-poled tent. It weighs 361 lbs., has a superficial area of 144 " square feet, is constructed solely for the accommodation of Staff-Serjeants in India, and " was not found suited for mule carriage.

European hospital tent.

" The European hospital tent is similar in shape to the European soldiers' tent, double- " poled, but is fitted with two walls or 'konnats,' leaving a passage of about four feet " broad all round the tent under the outer fly.

" This tent is generally used for hospital purposes only. It weighs 1,440 lbs., is " 27 feet long by 14 feet broad, and affords accommodation for 12 patients.

" It has all the disadvantages in material of the tents above-mentioned, and is, more- " over, too heavy for ordinary camel or mule carriage. It forms, however, a most com- " fortable camp hospital for sick, affording every protection from the sun and rain.

Native soldiers' double-poled tent.

" The Native soldiers' double-poled tent is made of the same material as other " Indian tents, but consists of only one fly, is of an oval shape, 24 feet long by 19 feet " broad, 344 lbs. in weight, and is calculated to accommodate 30 Native soldiers in India.

" It was not found suitable for mule carriage.

Native soldiers' single-poled tent.

" The Native soldiers' single-poled tent is a small circular tent, made of the same " material as the above-mentioned tent. It is 12 feet in diameter, 176 lbs. in weight, and " calculated to accommodate 13 Native soldiers.

" Both these tents are used exclusively for the accommodation of Native troops in " India.

" It is sufficiently light to be carried by a mule, but is not a useful tent on service, " being very hot, and giving very little space for the number of men allotted to it. Its " weight also is considerably increased by heavy dew or rain.

The English Circular double-poled tent.

" The English circular double-fly tent weighs 112 lbs., and is made of stout linen. It " is 13 feet in diameter, and has proved throughout the campaign the best tent for such " service as that on which the Force has been employed. It keeps out the rays of the " sun, and the ventilators (causing a free current of air) render the tent during the day " comparatively cool.

" This tent was used only by officers and for hospital purposes, in Abyssinia, but it is " admirably suited for the accommodation of British soldiers, and would probably answer " well for the cold season in India. It is light, easily carried, and can be pitched with " facility by two men.

" Both inner and outer fly being made of linen, it does not absorb moisture to the " extent Indian tents do.

"It is capable of accommodating 10 or 12 British soldiers in a cold climate; it is "not, however, suitable for standing camps on the plains in a hot climate. It might, "however, be improved by having another doorway cut opposite to the present entrance.

"The entrances to the tent should be made so as to fasten from the inside and not "the outside, in order that the inmates may be able to let themselves out when required, "which at present is not possible.

Tent English Circular single-fly.

"The 'Tent English circular single-fly' was used more than any other tent "during the campaign. It has answered all our requirements admirably, weighing only "66 lbs., absorbing very little moisture (and accommodating as it did from Lat to Magdala "and back again, 12 officers or 20 soldiers) it has been a most useful tent for all "purposes.

"Its diameter is 12 feet. Owing to this tent having only one fly it is not capable of "keeping out the strong rays of the sun, and though admirably adapted for service on "the highlands of Abyssinia, it cannot be considered a suitable tent for European soldiers "at any season on the plains of India.

Hospital marquee.

"The hospital marquee is 492 lbs. in weight, and made of stout linen; it has two "flies and a wall all round. It is not, however, suited to mule carriage, and was not used "at all in the highlands of Abyssinia.

"*Sick Carriage.*

Dhoolies.

"The dhooly is very much used in India for the carriage of sick; it weighs 123 lbs. "It is a description of cot made of teak, with cane bottom and short legs, suspended from "a bamboo pole by a light iron framework, which is covered with waterproof canvas.

"It is carried usually in India by six bearers. Its great weight and bulk, however, "render it unfit for service in a hilly country.

"During the passage of the Bashilo and Jidha rivers, it was found that 12 bearers "could not carry a dhooly at a greater rate of speed than one mile an hour, and along "the steep ascents and descents the army has had to travel, dhoolies constantly delayed "the baggage animals.

"Dhoolies might be improved if constructed entirely of light ironwork, instead of "heavy teak. They need not be made so high, or of such great breadth as at present, "and their legs should not exceed from two to three inches in length. Over a level "country the dhooly is an admirable means of sick carriage.

Ambulances.

"The ambulances brought to Africa were constructed to be drawn by bullocks; "they are heavy and unfit for draught except on made roads; they were very little "used in the campaign, only between Kumayli and Zula.

"Light ambulances drawn by mules, similar to those used by the American and "Prussian armies, might have been of some service on the roads between Zula and "Adigrat.

Dandies.

"The dandy consists of a light wooden framework with a cane bottom, with two "pieces of iron at either end, supporting the bamboo pole. It weighs 54 lbs., has nearly "all the advantages of a dhooly, and its portability renders it more suitable over bad "roads in a hilly country. A temporary cover can be made by fastening a blanket across "the pole.

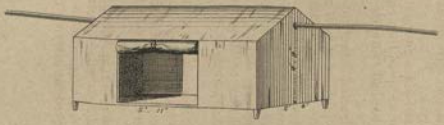
Swing cots.

"A few swing cots purchased from the shipping in Annesley Bay were used by the Force. A swing cot is simply a framework of light wood covered with canvas, the whole being supported by a bamboo pole, and weighing altogether 45 lbs.

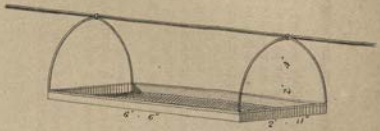
"Swing cots were found to be well adapted for carrying men suffering from slight

SICK CARRIAGE

Dooley



Dandy



Swing Cot

Hammock

Lith. at the War Dep't of the WAR OFFICE
Geo. Sch. & Asst. U.S. Engineers

"ailments or injuries, but uncomfortable for patients when placed on the ground "(especially in wet weather), as is occasionally necessary, to rest the bearers on the line "of march. They have the advantage, however, of being light, and require only four "bearers each.

"Several of MccGuire's field hammocks were sent with the Force; these, lashed on Hammocks. "bamboos, were used for the conveyance of sick on the line of march. They weigh, "with pole, only 24 lbs. each.

"They proved very useful for carrying men falling out on the line of march from "fatigue or temporary ailments, but they were not found to be adapted for wounded men "or for patients suffering from serious illness; they might, however, be easily made a "most comfortable means of carrying men suffering from any complaint, and owing to "their lightness, portability, and other advantages they would then doubtless be the "best description of sick carriage for such a country as that we have just marched "through.

"The field hammock had the same disadvantage as the swing cot, in that it could "not be placed on the ground in wet weather (this defect might, however, perhaps be "remedied by using the staves as supports). If made longer and wider, and fitted inside "with a light wooden frame, so as to prevent the patient from being doubled up (which "he is very liable now to be, unless poles are specially fitted), the field hammock would "be a better means of conveyance for sick, and forming as it does a sleeping hammock "for men when-encamped, and thus keeping them clear of damp ground and conducing "to their health and comfort, it would appear highly desirable that some means should "be taken to improve the MccGuire field hammock, to render it a more perfect means of "conveyance for sick men.

"A stretcher weighs 17 lbs., consists of a piece of canvas of about 7 feet by 2 feet, Stretchers. "slung between two slight bamboos. Stretchers are useful for conveying wounded men "off a battle-field, but are not of much use on the line of march.

"Iron kujawahs and cacolet kujawahs weigh respectively 119 and 181 lbs. each; Kujawahs. "they were used for the conveyance of two sick men on each camel on the return march "of the army from Senafe to Zula, and have not been sufficiently tested to enable me to frame a report on them.

"The kujawah in a camel country is a good means of conveyance for sick men. No "protection, however, is afforded the patient from sun or rain.

"Double-seated camel saddles weigh 133 lbs., and afford carriage for two men Camel "sitting astride on each camel. These saddles are fitted with good backs, and in a saddles. "camel country constitute a very suitable means of conveyance for men suffering from "fatigue or slight ailments, and who are able to sit up. They were used to carry the "sick from Antalo to Kumayli, and answered admirably.

"Mule pads weigh 35 lbs. each; they were very little used in this campaign, Mule pads. "the Otago saddle having been generally available for the conveyance of men who fell "out on the line of march."

CHAPTER XXX.

WATER SUPPLY.

As Abyssinia was known to be a sterile country, arrangements were made to procure a proper supply of water, which would have been unnecessary in a European campaign.

Her Majesty's Transport Regulations require every vessel engaged for the transport of fifty persons or upwards to have a condenser. It was impossible to comply with this in the case of the Abyssinian Expedition, as the number of vessels required with condensers was not to be found in the Indian seas.

Water ration on board ship for men and animals.

Vessels chartered in Bombay were fitted up with tanks, giving a two months' supply of water to all on board at the rate of 3 gallons per man for Europeans, 1 gallon per man for natives, 6 gallons per horse, 5 gallons per pony, 6 gallons per bullock, and 40 gallons per elephant.

The Bombay rate, when camels are shipped, is 8 gallons per diem per camel, but no camels were sent from Bombay. This rate was, however, observed in the vessels sent to fetch camels from Aden, Berbera, and ports in the Red Sea.

An extra supply of water was shipped in all vessels which had not condensing apparatus, and coal was placed in every ship with condensing apparatus to supplement.

Condensers sent from Bombay and Aden.

With this supply the Force started for Abyssinia. Two special condensing hulks, the "Semiramis" and "Hyderabad," which could condense respectively 4,000 and 10,000 gallons daily, were sent from Bombay to Annesley Bay at the commencement of operations.

A number of spare tanks filled with water were sent from Bombay to Aden, for the use of the transports.

Two Normandy's condensers were sent from Aden, and one condenser from Bombay, to be fixed on shore for the use of the troops.

The condensing power of the vessels of the Bombay Marine and of the transports chartered was as follows :— Condensing power of transports.

Name of Vessels.	Number of gallons distilled.	Name of Vessels.	Number of Gallons Distilled.
Vessels of the Bombay Marine.		Premchund Roychund ..	600 gallons daily.
Coromandel, S.	1,200 gallons daily.	Diliwar	80 ,,
Dalhousie, S.	1,200 ,,	Ann Millicent	50 ,,
Earl Canning, S.	1,200 ,,	Cowasjee Jehangeer	50 ,,
Lord Elphinstone, S.	1,200 ,,	Carona	520 ,,
Sir John Lawrence, S. ..	1,200 ,,	Michael Scott	30 ,,
May Frere, S.	700 ,,	Underley	44 gals. per hour.
Semiramis, S.	4,000 ,,	Atalanta	26 ,,
Hyderabad	10,000 ,,	Durham	56 ,,
Transports.		Dalham Tower	30 ,,
Arminian, S.	1,125 ,,	India	52 ,,
Arabia, S.	500 ,,	Malabar	48 ,,
Asia, S.	500 ,,	Squando	45 ,,
Great Victoria, S.	1,900 ,,	Vernon	20 ,,
General Havelock, S. ..	500 ,,	Oriental	30 ,,
India, S.	800 ,,	Court Hey, S.	50 ,,
Indore, S.	800 ,,	Hunsdon, S.	50 ,,
John Bright, S.	400 ,,	Electric, S.	25 ,,
Lord Clyde, S.	800 ,,	Bombay, S.	25 ,,
Madras, S.	500 ,,	Himalaya, S.	30 ,,
Norna, S.	625 ,,	Waterwitch	20 ,,
Ottawa, S.	400 ,,	Nile	26 ,,
Thales, S.	800 ,,	Legion of Honour	50 ,,
Sir Bartle Frere, S.	500 ,,	Alabama	20 ,,
Sunda, S.	900 ,,	Golcondar, S.	75 ,,
Salsette, S.	600 ,,	Bengal, S.	73 ,,
Sattara, S.	1,200 ,,	T. A. Gibb, S.	48 ,,
Sultan, S.	800 ,,	Catherine Apcar, S.	42 ,,
Altear	120 ,,	Paris, S.	80 gals. per hour when under weigh.
Agamemnon	500 ,,	Mauritius, S.	250 when at anchor.
Geriant	20 ,,	Defiance, S.	50 gals. per hour.
Haneman	120 ,,	Challenge, tug, S.	50 ,,
Humber	150 ,,	Punjab, S.	21 ,,
Indian Chief	45 ,,	Middlesex	40 ,,
Jessy Gilbert	50 ,,	Far East, S.	45 ,,
Mabel	30 ,,	City of Manchester, S. ..	1,800 ,,
Mofussilite	30 ,,	City of Dublin, S.	1,700 ,,
Nelson	500 ,,	England, S.	2,900 ,,
Royal Standard	700 ,,	Queen, S.	2,200 ,,
West Indian	60 ,,	Peruvian, S.	2,002 ,,
Windsor Castle	500 ,,	Kangaroo, S.	1,700 ,,
Zoroaster	36 ,,	Californian, S.	2,780 ,,
Zenobia	450 ,,	West Indian, S.	2,780 ,,
Star of Brunswick	250 ,,	Golden Fleece, S.	1,440 ,,
Sam Cairns	740 ,,	Mauritius, S.	1,500 ,,
Sir Hugh Rose	100 ,,	Queen of the South, S. ..	1,600 ,,
Star of India	400 ,,	American, S.	2,700 ,,
Scimitar	500 ,,		

Representing in all a daily condensing power of about 96,000 gallons.

Amount of coal expended in condensing.

The coal expended for condensing water on board transports, and in the "Semiramis" and "Hyderabad" in Annesley Bay, was about 8020 tons.

Total amount of water condensed.

The water supplied to the Force from Aden during the campaign was 854,796 gallons.

	Tons.		Gallons.
The water supplied in Annesley Bay was as follows:—			
Condensed by transports and ordinary ships	29·068	}	
Supplied by men of war, sailing transports, and sent from Suez and Bombay	about 10·850	}	= 9,989,500
Condensed on shore	daily 50	—	12,500

Water arrangements on arrival at Annesley Bay.

On arrival at Annesley Bay, native boats were employed as tank-boats. These collected the superfluous and condensed water from the different vessels, and lay in as shallow water as possible. From these boats the water was pumped into a falling wooden trough about 200 yards long, which led into a cluster of tanks collected from several transports, and stationed above high water. Here the animals were watered.

One, and subsequently two condensers were erected at the end of the pier at Zula, and one on an artificial island, which supplied water for the use of the men. These together gave about 50 tons of water daily. Each man was limited to 1½ gallons per day for the first four months.

Water was at first obtained in some wells dug in the bed of the Haddas, but these quickly ran dry. At the time Sir Robert Napier landed in Annesley Bay, the vessels were supplying about 150 tons of water daily to the troops and animals on shore.* On the 11th January the whole of the animals at Zula were fully watered for the first time. The source of supply was, however, precarious, as a gale of wind might have blown all the vessels out of the harbour, and left the troops without any resource. Commodore Heath telegraphed to England for three Normandy's condensers, and for iron piping to bring water from Weah or Kumayli, and made efforts to obtain a reserve of water in tanks on shore. The three condensers were sent from England round the Cape, but not arriving before the conclusion of the Campaign, were intercepted and employed at Aden.

Condensers and water pipes applied for from England.

A detailed list of the water pipes and fittings supplied from England will be found at the end of Chapter IV.

Norton's tube wells recommended.

The Director of the Royal Engineer Establishment at Chatham, on the 25th September, 1867, recommended that Norton's tube-wells should be sent to Abyssinia. A description of the well and apparatus will be found below; the experience of the Campaign proved it to be an exceedingly ingenious method of boring into any material short of solid rock or very large boulders. It was simple of application, the whole weight of the boring apparatus being only about 150 lbs. Not included in the boring apparatus were the pipes which constituted, as it were, the linings of the wells, and which weighed about 2⅞ lbs. to the foot, and the pump for drawing from each well, which weighed about 24 lbs.

The following is a description of Norton's American Tube Well:—

Description of Norton's tube well.

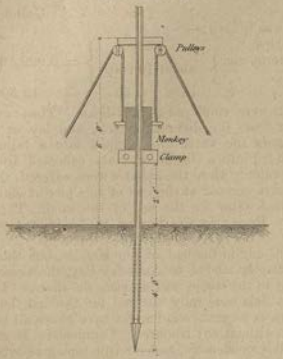
"This well consists of a hollow wrought-iron tube, the lower end of which, being "provided with an eight-square point, and perforated with a number of small holes, is "driven by means of a monkey, or weight, into the ground.

"The lower length is 11 feet long over all, of which the solid point is 10 inches long, "and, being welded two inches into the lower end of the tube, leaves the hollow part of "the tube 10 feet long. The holes extend up the tube in six parallel rows 1½ inch apart,

* One ton of water equals 250 gallons.

NORTON'S TUBE WELL.

SKETCH A



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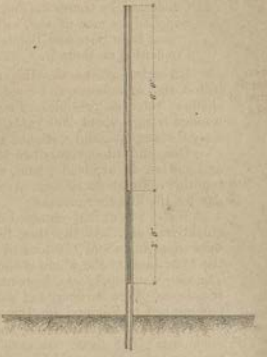

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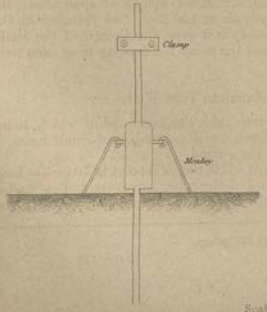

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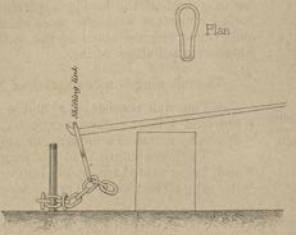

Scale $\frac{1}{2}$ Inch = 1 Foot

Lith. in the TOPOGRAPHICAL DEPOT of the WAR OFFICE.
UNDER THE DIRECTION OF COL. SIR H. JAMES R.E. DIRECTOR

" for a length of $2\frac{1}{2}$ feet, their total area being about $1\frac{1}{2}$ times that of the internal " diameter of the tube, which is $1\frac{1}{4}$ inch, while its exterior diameter is $1\frac{3}{8}$ inch.

" The weight per foot is about $2\frac{3}{4}$ lbs. The tubes sent down from London were in Driving the well.
" various lengths, from 3 feet to 9 feet, and, having a screw thread cut in each end, can " be jointed together by means of iron collars 2 inches long, screwed over the ends, the " joints being made good by means of white lead.

" The position for the well being selected, a hole is made with a crowbar, perfectly " vertical, in which the tube is inserted. A clamp of cast-iron, faced on the top and inside " with steel, having a groove in the centre of the size of the exterior diameter of the " gas-pipe, with a screw thread cut roughly inside so as to lay hold of the pipe, made in two " pieces capable of being tightened up by means of two screw bolts, is placed on the tube " at a height of from 18 inches to 2 feet from the ground, according as the soil is difficult " or easy, and screwed in firmly, care being taken to tighten each bolt equally.

" The monkey, consisting of a hollow iron casting weighing about 75 lbs., with a " couple of lugs projecting one on either side, is next placed on the pipe; and lastly, a " couple of pulleys are clamped to the tube as high from the level of the ground as a man " can conveniently reach, usually about 6 feet, a rope being rove through each pulley, and " secured to the lugs on the monkey. (See Sketch A.) The monkey is raised by two men, " who should work steadily together, and pull the ropes at the same angle with the pipe, " so as not to cause a tendency to it to lean over on one side more than on the other. " The monkey may be steadied and assisted in its descent by a third man, who, standing " on one side, forces it down at each descent. On the clamp reaching the level of the " ground, the monkey is raised while the clamp is unscrewed, and raised a height of 18 " inches or 2 feet up the tube, and again screwed up. The monkey is then lowered into " the clamp, and the pulleys are fastened higher up the tube.

" The tube, during its descent, should be occasionally turned round in the ground, " so that the position of the angles of the edges of the point may continually be altered. " The same man who does this should pay particular attention to the clamp, to see that " it does not move on the tube, tightening up the bolts at the first appearance of any " slipping.

" When the tube is driven so far into the ground that its upper end is not sufficiently " high to carry the pulleys, a piece of pipe about 6 feet long (see Sketch B), having a " piece of tube 3 feet long, of the same exterior diameter ($1\frac{1}{4}$ inch) as its internal " diameter, brazed for a length of 18 inches into one end, and consequently projecting a " length of 18 inches, is placed in the upper end of the tube, and the pulleys clamped " into it at a convenient height. The driving is continued until the first tube is driven all " but two or three inches, when the clamp, monkey, &c., are removed, and an additional " length screwed in by means of a collar. This length is driven as before, care being " taken to turn round the tube in the boring to tighten up the joints, which become " loosened by the jarring of the monkey.

" Before screwing in an additional length of pipe, the well is sounded by means of a " small lead line, to ascertain the depth of water or character of rubbish which penetrates " through the holes in driving.

" As soon as it appears that the well is driven deep enough, a pump is screwed in at " the top, and the water drawn up. It usually happens that the water is at first turbid, " but after a short time, as the chamber at the bottom of the well becomes enlarged, " this turbidity ceases, and the water becomes pure.

" When sinking in gravel or clay, the bottom of the well frequently becomes filled " up, and it is necessary to remove the obstruction before a pure supply of water can be " obtained.

"To do this a pipe of small diameter is lowered down the well (the pump being "attached to its upper extremity) to within about 1 inch of the solid material, as ascer- "tained by the lead.

"Water is then poured down the outer tube, and jumped up the inner one, gradually "washing away the surface of the material until the well is cleared out to the bottom, as "ascertained by the length of the inner tube, which can then be removed, and the pump "screwed on to the well.

"The pipes, when sunk, can be drawn at pleasure in two or three ways.

"1st. The monkey is placed on the head of the pipe, and the clamp screwed on "near the top. By raising the monkey, and striking the clamp a series of blows, the "pipe is started and gradually drawn, the position of the clamp being shifted as required. "(Sketch C.)

"2nd. A chain is passed once or twice round the pipe, one end passing through a "ring at the other. A moveable link is then placed on the chain, and a lever or hand- "spike inserted into the link, which, tightening the chain round the pipe, gradually lifts "the well, the position of the chain being altered as required. (Sketch D.)

Stores required.

"The stores required for sinking a well, in addition to pipes, pump, &c.* were :— "1 File. 4 Gas tongs, pairs ($1\frac{1}{2}$", $1\frac{1}{4}$", $\frac{3}{4}$", $\frac{1}{2}$"). 1 Crowbar, 5 feet. 1 Spanner, for "clamp. 1 Wrench, for clamp of pulleys. 1 Chain, 3 feet, and link. †1 Monkey. "†1 Clamp. †1 Pair of pulleys and clamp. 1 Tool (6 feet gas-pipe, with piece welded "in.) And Gas-pipe $1\frac{1}{2}$ inch, weighs about $2\frac{3}{4}$ lbs. per foot.

Men required.

"Five men are required for driving a well quickly, allowing two men in two reliefs "for working the monkey, while the fifth (a non-commissioned officer) steadies the "monkey in its descent, attends to the clamp, and moves it and the pulleys as required. "Three men could drive a well very well, although requiring more time, as the labour "of working the monkey is rather severe, unless reliefs are provided.

"Two wells were bored at Chatham on the 22nd of September, and one at "Wouldham on the following day, each by a different party of men, who consequently "knew nothing previously of the process; Mr. Norton's agent, Mr. Hawkesley, and two "American gentlemen, being present on all three occasions.

No. 1 well.

"The first well was driven in soil consisting of clay, gravel, and large stones.

"First pipe, 11 feet long, was driven in 30 minutes.

"The second length, 9 feet long, in 39 minutes.

"Water was now tried for and found, but not in sufficient quantities.

"An additional length of pipe, 6 feet long, was then attached, and the driving con- "tinued, several hard strata being passed through until at 24 feet from the surface. For "the next foot the driving was easier, and at 25 feet a copious supply of water was found, "at first very thick, as if containing gravel or clay, but afterwards becoming whiter, "leaving a slight deposit of chalk. If the pumping had been continued, the well would "probably have cleared up. The point of the lower tube in being drawn was found "uninjured.

No. 2 well.

"This was sunk in solid chalk without accident, a depth of 17 feet being obtained "in 1 hour 25 minutes. No water was obtained at that depth, and as it was then dark

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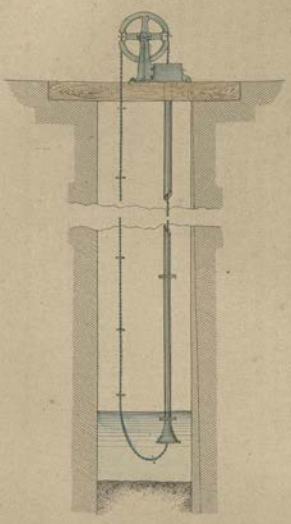
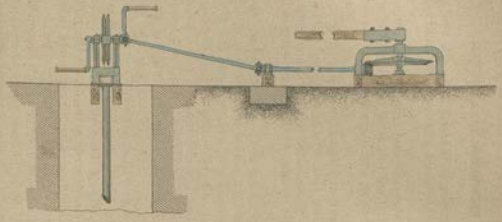
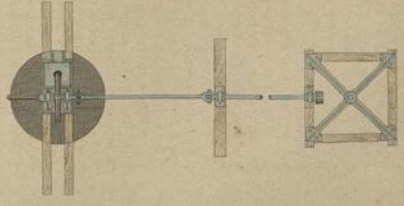
* Estimated weight of stores .. 142 lbs.
Weight of pump .. .. .. 24 „
Weight of tubing for 20 foot well 56 „

† The stores marked thus could be carried on the tool (the whole weighing about 100 lbs.) by two men.

BASTIER'S CHAIN PUMP.







Scale, ½ Inch = 1 Foot

Lith. at the TOPL. DEPOT of the WAR OFFICE.
CMG SIR H. JAMES, R.E. Director

W. Naylor Lith.

"the pipes were drawn, the point being slightly turned, but to so small an extent that "after being filed up for five minutes it was again used for No. 3 well.

"This well was sunk at Wouldham, three miles from Rochester, in the valley of the "Medway. The well was commenced and the apparatus working within 10 minutes of "arriving on the ground. No. 3 well.

"The first 4 feet was driven in a few minutes through a fine loam; the next 7 feet "required 47 minutes to drive; and after this, the strata becoming much harder, the "progress was slower, as, one of the screws of the clamp pulley having broken, time was "lost in procuring one to replace it.

"A total depth of 18 feet was attained in two hours, and 4 feet of water found in "the well on plumbing it. Driving was then continued, and at 22 feet from the surface "8 feet 6 inches of water was found in the pipe. On the pump being applied, the water "came up with difficulty, and was thick and discoloured. In half an hour the quantity "increased, and the water became purer. After pumping three hours, but a small "quantity of chalk was brought up in solution, and the water was drinkable. The supply "was at the rate of 10 gallons per minute, and, instead of diminishing, appeared to "increase. This well was left in the ground."*

On the above Report, and at the recommendation of the Director of the Royal Engineer Establishment, it was decided that a supply of Norton's tube wells should be sent with the Force, and Lieutenant A. Le Messurier, R.E., was appointed to superintend the well-sinking apparatus in Abyssinia. Under his orders were one serjeant and twenty-six rank and file of the Royal Engineers, who were incorporated in the 10th Company, R.E. Lieutenant Le Messurier and his party were sent from England in the "Mendoza" in November with 50 Norton's wells completely equipped. To these 50 more were subsequently added and sent from England in the "Leith." Norton's tube-wells ordered.

Another description of pump adapted for lifting water from wells, tanks, rivers, &c., and suited, from its cheapness, durability, and portability, to accompany troops on the line of march, was also sent to Abyssinia, and supplied by Messrs. J. Jackson & Co., 17, Gracechurch-street, London, E.C. This was "Bastier's patent chain pump." It could be worked by one man with a pipe 2½-inch diameter, in lengths amounting to 40 feet, and was said to be capable of raising 12 gallons of water per minute.† Its cost, with spare lengths, washers, &c., ready packed for shipment, was under 50*l.*; its weight not more than 150 lbs.; and, being capable of easy removal, and requiring no cleaning, care, or attention, it proved to be a most useful description of pump for such a campaign as that in Abyssinia. It could be fixed in a few minutes, and by a simple arrangement adjusted for any depth; and it was wisely considered that the flow of water from the discharge pipe of such a pump would do away with the perpetual water-drawing which always occurs in tropical climates where the supply is derived chiefly from the rudely-constructed wells of the country. A larger description of Bastier's pump, with a pipe 6 inches diameter, gave a supply of 180 gallons a minute. Its motive power was a camel or a pair of bullocks; and its cost, ready for shipment, about 80*l.* Bastier's chain pumps. Description.

The Bastier's pumps sent to Abyssinia were— Number ordered.

Five	2½-inch diam.	× 35 ft.	deep.
Six	„ „	× 31	„
One	6-inch „	× 35	„

* Report by Lieutenant W. B. Hurst, R.E.

† For the result of the experiments in Abyssinia with the Bastier's chain pump, see page 298. With 40 revolutions a minute 50 gallons of water were raised; with 30 revolutions, 36 gallons.

Means of working.

By the Bastier's patent chain pump the water is lifted through vertical tubes. At every interval of 50 yards a contracted part, or working barrel, is inserted, smaller in diameter than the main pipe, one of which is always placed at the lower end. An endless chain passes over the driving wheel at the top, going down free, and coming up through the tube, into which it enters by a bell-shaped mouth-piece. On this chain are fixed India-rubber discs, smaller in diameter than the main pipe, but fitting tight in the working barrels, so that all the water that enters is forced up and carried through the main pipe. The discs being free all round from the pipe for nine-tenths of the whole distance, the friction is reduced to a minimum. Eighty-seven per cent. of the whole area of the tube is lifted in water. A 3¼-inch pump has lifted 120 gallons per minute, from a depth of 270 feet, with 10·75 indicated horse-power; other sizes in proportion.

In Abyssinia, the general management of the inland water supply was entrusted to Lieutenant Le Messurier, working under the Quartermaster-General's Department, and constant reference to the water supply arrangements will be found in the preceding chapters, and in the fortnightly Reports submitted to the Quartermaster-General at the Horse Guards, by Captain Holland, Assistant Quartermaster-General.*

At the conclusion of the campaign Lieutenant Le Messurier submitted the following general Report on the whole water supply arrangement under his immediate control in Abyssinia:—

Lieutenant Le Messurier's general Report on water supply arrangements in Abyssinia.

"The tools, implements, and stores taken to Abyssinia were distributed in loads of "rather more than 200 lbs. Ten sets of driving apparatus, 50 wells complete, and a few "reserve articles were shipped with the detachment from England, and an additional 50 "were despatched a month or two later.

"List of tools, stores, implements, &c., despatched with the American tube wells, "distributed under the following heads:—

A. Driving apparatus.
B. Wells.
C. Reserve.

A.

Driving Apparatus.

"Articles for one set of driving apparatus:—

"No. I. Mule.

1 monkey, with ropes	.. ..	87 lbs.	101
1 crow bar, 5 inches long	.. ..	20 „	
1 wrought-iron clamp	.. ..	26 „	
1 pair of pulleys and clamps	.. ..	6 „	
1 extension pipe	.. ..	16 „	
1 extra clamp and screw	.. ..	26 „	
1 set of cleaning tubes, viz.—			101
4 ft. 6 ins. } length of ½ in. pipes		27 „	
1 ft. 6 ins. } with reducing socket			

Total load 202 lbs.

* See pages 5, 20, 73, 89, and 109.

"No. II. MULE.

Packed in a box.

1 water barrel, 3 gallons	.. ..	40 lbs.	
1 leather bucket ..	.. ..	5 „	106
1 pump for cleaning ..	.. ..	25 „	
Available for personal necessaries	..	36 „	
1 set gas tongs $\frac{1}{2}$, $\frac{3}{4}$, 1, and 1$\frac{1}{2}$	..	16 lbs.	
2 spanners	..	8 „	
1 pair of stocks	..	13$\frac{3}{4}$ „	
1 set tube cutters	..	7$\frac{1}{2}$ „	212 lbs.
1 10-in. half-round file ..	..	10 oz.	
1 lifting chain	..	3 lbs.	
1 gallon tin of oil	..	10 „	
1 oil can with trap nozzle ..	..	1 „	
1 *tin* white lead	..	10 „	106
10 spare nuts and screws for clamp	..	19 „	
1 plumb-bob	..	6 oz.	
2 iron caps	..	1$\frac{3}{4}$ lbs.	
2 spare collars	..	1$\frac{1}{2}$ „	
2 spare washers	..	1 oz.	
5 leathers for pumps ..	.. ..	3 „	
2 spare monkey rings ..	.. ..	1 lb	
Box with hasp and lock			

"B.

"Articles for two tube wells to be carried on one mule :—

Wells.

1 well tube, 6 feet long, 1$\frac{1}{4}$ in. diameter ..			103
Solid iron point, steel tipped, 10 feet long		22 lbs.	
3 6-foot lengths, 1$\frac{1}{4}$ diameter ..	..	48 „	
1 3-foot „ „ „ ..	..	8 „	206
1 pump	.. ..	25 „	
Second well	.. ..		103

"C.

"The reserve consisted of—

Reserve.

11 sets of tube wells 1·6′ length, 1$\frac{1}{4}$ inch, with solid iron points.
Each consisting of 3·6 foot lengths 1$\frac{1}{4}$ inch, one 3 foot length, 1$\frac{1}{4}$-inch.
10 6 foot lengths $\frac{1}{2}$-inch tubes for cleaning out.
100 bolts and nuts for clamp.
100 lbs. white lead.
1 vice.
1 portable forge.
2 reducing sockets.

"The above distribution enabled an officer to carry one set of driving apparatus and "six wells on five mules, but the nature of the campaign was such that these loads had to

" be lessened considerably; and the list shown in another part of the Report will, I trust, " contain all that may be necessary for the perfect field equipment of this branch.

Means of packing.

" The weight of the Otago pack-saddle, with bridle, is 45 lbs.

" For shipment by sea the driving apparatus, including water barrel and bucket, was " packed in one case.

" The tools, in a box, provided with hinges, hasps, and padlock, and ready for trans- " port on mules. The tubes were packed separately, four sets in a case.

" The pumps, on account of their liability to break, were packed separately, the " handles being taken off.

" The labels on the cases correspond with the words in italics.

" All cases containing these were marked with the broad arrow in blue paint.

" The Store Depôt was at Zula.

" The works for the water supply of the army from Kumayli to Antalo (200 miles) " were more or less of a permanent nature, supplemented by a few tube wells driven in the " best positions for drinking purposes.

" Between Antalo and Magdāla, the wells were driven, on arrival, at the camping " grounds, and were drawn out again about 9 P.M. the same evening.

" The experience of the campaign has shown that the pump will not work satisfactorily " with a lift beyond 20 feet, and the delivery, varying with the depth, does not exceed " eight gallons per minute.

Reduced mule equipment.

" *Equipment.*—After a few marches, on account of the scanty food and scarcity of " water, the mules were unable to carry their loads, and the subjoined list shows the " reduction and distribution of all articles necessary for full equipment, the unnecessary " articles being omitted, and a few added.

" A.

" Articles for one complete set of driving apparatus:—

" No. I. Mule.

Monkey, with ropes, with sticks attached	..	..	82	165 lbs.
1 crow bar	..	20 lbs.		
1 single wrought-iron clamp ..	..	20 „		
1 pair of pulleys and clamps ..	..	6 „		
1 extension pipe	..	16 „	83	
1 set of cleaning tubes:—				
3 6-foot .. } lengths of ½-in. pipe. .		21 „		
1 3-foot .. }				

" The cleaning tubes should be strapped together.

" The wrought iron clamp and the pulleys should be slipped over and clamped to the " extension pipe, to which the crowbar should also be attached. These are best carried in " a salita of stout sacking slung over a saddle of the Punjab Mule Train pattern, con- " sisting of stout pads, with breast-plate and breeching.

"No. II. MULE.

To be contained in stout canvas bag.	Tin of white lead	25 lbs.			
	Extra set of ropes and sticks ..	2 „			
	4 iron caps	3 „			
	4 spare collars	3 „			
	12 spare washers, with clock for ..		12 oz.		
	12 leathers for pumps		8 „		
	2 spare monkey rings	1 „			
	½ gallon tin of oil	5 „			
	1 oil can, with trap nozzle ..	1 „			
	2 reducing sockets	1 „		78	
To be contained in a stout canvas, similar to a soldier's hold-all.	Sets of gas tongs, ½, ¾, 1¼, 1½ ..	16 „			156 lbs.
	2 spanners	8 „			
	1 pan stock and dies	18 „	12 oz.		
	1 set of tube cutters	7 „	8 „		
	2 10-in. half round files	1 „	4 „		
	1 small spanner for pulleys ..	2 „			
	1 plumb-bob		8 „		
	4 spare nuts and screws for clamp ..	8 „			
For a stout canvas hold-all.	The most useful carpenter's tools, such as saw, hatchet, plane, hammers, bill hook			78	

"Boxes are objectionable, and the above will travel well in a salita over a Punjab "saddle.

"B.

"Articles for tube wells, to be carried on one mule :—

"No. III. MULE.

2 well tubes 6 in. long, 1¼ in. diameter, with solid iron point, tipped, 10 in. long.	32 lbs.	80	160 lbs.
2 6-foot lengths, 1¼ in. diameter	32 „		
2 3-foot lengths, 1¼ in. diameter	16 „		
Second well same as above		80	

"The extra steel-tipped length enables four pumps to be at work should water be "within 14 feet of surface. The tubes to be bound by short stout straps, with rings attached "to them to fit on to the hooks of the Otago pack-saddle, which is well adapted for this load.

"No. IV. MULE.

3 leather buckets	15 lbs.	90	180 lbs.
3 pumps	75 „		
3 leather buckets	15 „	90	
3 pumps	75 „		

"The buckets should be made just large enough to receive the pumps, which must be carried in them for protection. Buckets.

"The buckets, three on a side, can be carried in a stout canvas salita, upright in "packets, and the saddle should be of the Punjab pattern.

"The screw-headed bolt that secures the handle to the pump should be done away

"with, and a plain steel bolt of larger diameter substituted, with a shot at the end to "receive a double-tongued porce of iron. The bolts continually work loose and are lost. "The friction also on the bolt is so great that in a few days a new one is required. The "lower leather, with the clock on the valve, shrinks in the hot climate. The body of the "pump rests on this leather, and there is only one small screw connecting the body of "the pump with its base. There should be two projecting tongues from the body of the "pump, to pass under the lip of its base, and tightening screws, to prevent the escape of "air, which invariably occurs at this point.

"The space between the body and the tip will always require packing with tow and "white lead.

"The saddle and salita to be the same as for No. I.

"C.

"Extra tube wells, to the extent of 15 per cent., may be considered as a reserve. No "extra cleaning-out tubes required.

"Extra bolts and nuts are unnecessary, as not more than five or six of those in use "failed.

"30 lbs. of white lead and the Vice and Portable Forge can only be of use where "there is direct and quick communication with the depôt.

Working of well-borers in Abyssinia.

"5. *Working.*—The detachment of Royal Engineers from England consisted of—

"1 Sérjeant,
"4 Corporals,
"16 Men;

"and this is a good proportion, giving four squads of four men, with a corporal in charge "of each. The distance between Kumayli and Antalo was divided into three divisions, "their extent (about 70 miles) being fixed by the position of the three large depôts— "Senafé, Adigrat, and Antalo. An officer of Engineers, with one squad of the detach- "ment, was left in charge of each division, to develop and store the supply at the larger "stations by means of such labour as was available, and to make and keep in order the "roads and drinking-places for the beasts of burden at the passing stations. The four "squads accompanied the 1st Division in its advance from Antalo to Magdāla; one squad "will be found sufficient for each column, and with them they require tubes, imple- "ments, &c., viz.:—

"1 Mule, as No. I.
"1 Mule, as No. II.
"2 Mules, as No. III.
"1 Mule, as No. IV.

"According, therefore to the number of columns and distances from the base of opera- "tions, so will the number of squads be, with their complement of five mules to each "squad. A spare mule, if possible, should be allowed.

"The transport of tents and personal necessaries for the men has not been included. "The practice of stringing the mules one to the other is objectionable, and, with care, "they can be made to follow their leader independently. On the march each man walks "by the side of a mule, and the corporal in rear.

Boring apparatus.

"The position for the well having been selected, the steel-pointed tube is placed "vertically in a hole made by the crowbar. The clamp is fixed on the tube, about 3 feet "from the ground; the extension-pipe is inserted after the monkey has been placed on

" the clamp. The pulleys are then fixed to the extension-pipe, and stout sticks should be " attached to the ropes, to save the man's hands from cuts during the process of " driving.

" The monkey may be steadied and assisted during its descent by one of the men " forcing it down at each descent.

" When the clamp reaches the ground, the monkey is raised, the clamp unscrewed, " and, after readjustment, the driving is continued until the screw-thread at the top of the " tube is within a few inches of the ground. The extension-tube is then taken away with " the monkey, and the clamp unscrewed; a small iron cap is then screwed on to the " thread of the driven pipe and joint, being white leaded. A second tube is then screwed " into the upper portion of the iron cap: the clamp is then attached, and the monkey " passed on over the head of the pipe—a matter sometimes of difficulty, but it is not " advisable to reduce the length of the tubes to obviate this. The extension tube is " again applied, if necessary, and the driving is continued till water is reached. The " plumb-bob should be lowered at the times of fitting on fresh tubes. The depth of water " can thus easily be told, and the cup at its base enables the men to judge of the quality " of the soil. The gas tongs are useful in screwing the tubes round as they are being " driven; and it was found advisable to continue the driving until the plumb-line showed " at least 5 feet of water in the pipe. The clamp should be carefully watched, and as " soon as it shows signs of shifting the screws must be tightened.

" When the well is driven deep enough, the pump is screwed on at the top, and the " water drawn up, this operation being greatly facilitated by filling the pump-head and " tubes with water. The water at first is generally impure, but after a short time, as the " chamber at the bottom of the well enlarges, it becomes pure. In fine gravel or clay the " bottom of the tube becomes choked, and the matter is removed by inserting the " cleaning-out tubes and lowering them to within about one inch of the solid material, " and the pump-head is fixed to them by means of the reducing socket. Water is then " poured down the larger tubes, and pumped up through the smaller ones, gradually " ashing away the surface of the material until the well is cleaned out to the bottom, " when the inner tubes are removed, and the pump screwed on to the well. In swampy " and marshy ground, the cleaning-out tubes were of no use. The ground round the " wells should, if possible, be metalled with stones to a depth of 6 inches, and a rough " wall built round them for protection against cattle.

" In drawing the tubes, the process of driving was reversed. A tube is not complete Drawing. " unless there is one iron collar screwed to it, and as the thread on the other end of the " tube often gets damaged on the march, it is advisable to fit the tubes and collars ere " the driving is commenced. The side openings in the base of the pump require to be " enlarged, as there is difficulty in working the tongs when screwing the pump to the " tube.

" 6. *General Remarks.*—The requirements of a column on the march would neces- General " sitate an extraordinary number of the wells, and for operations in the field these wells remarks. " must be considered merely as an auxiliary, and for the provision of a certain supply of " pure water for drinking purposes after the streams and pools become soiled by constant " disturbance. Time and circumstances would possibly not admit of their being used to " their greatest advantage: viz., in searching for water.

" A description of the works carried out at the chief stations follows, as there may Description " be some points which may prove useful hereafter. of works.

" At Zula, about four miles from the shore, water of a temperature of 119°, at a depth Zula. " of 50 feet, was obtained from a well dug by the Punjab Pioneers: yield about eight

" gallons a minute. Others were sunk to a greater depth in the vicinity, but with less
" satisfactory results.

Kumayli. " At Kumayli the supply was obtained from wells sunk in the bed of the river and
" from the tube wells. Finally 10 wells were at work, three of them fitted with Owen
" and Clinton's double-action pumps, one with a Bastier 2½-inch chain-pump, one with
" two-tube wells fixed, and five with portable hand-pumps, besides two tube wells driven
" into the bed of the river, and four dipping wells, reserved for the Shohos.

" On the 19th January, 1868—

" 20 Elephants,
" 2,380 Camels,
" 879 Ponies,
" 2,646 Mules,
" 300–500 Convoys,
" 400 Commissariat bullocks,

" in addition to troops and followers, were watered here.

" A large chunamed reservoir was also made for the use of troops on the march,
" and the supply of the railway was sent in water carts filled by two portable force-pumps
" from this reservoir.

" The drinking-troughs were all built into stout stone walls, and the entrances pro-
" tected by stone barriers, at which guards were placed to prevent more than a certain
" number of animals entering at one time. Watering generally occupied about four
" hours twice a-day, and the wells for drinking purposes were in constant use. The whole
" of the wells were protected by a dry stout toe-wall.

Suru. " At Suru, in a narrow gorge, a spring which issued from the rock, gave the supply.
" Two-tube wells were fixed in a small sandy pool for drinking purposes, and lower down
" the Pass 18,000 gallons were stored in tanks built up against the side of the rock.
" Biscuit boxes and barrels were fixed alongside, and these were filled by buckets from the
" tanks, the muleteers filling for their own beasts. A side road was walled off to prevent
" a block between the beasts going to and returning from water.

Undul Wells. " At Undul Wells—dividing a march of 30 miles—water had to be found, and the
" supply was at first obtained from a well 24 feet deep, in which two of the tube-wells were
" fixed, and supplemented finally by a well, 30 feet deep, built of solid masonry, which
" carried a Bastier chain-pump.

" After repeated trials, one tube was driven 29 feet but with no result; a third well,
" 31 feet deep, was excavated, and gave a fair supply for drinking purposes.

Rahagedi. " At Rahagedi, in the Pass, the sources of some springs were thoroughly cleaned
" out, and stone wells built; from these the supply ran into six tubs, which afforded good
" drinking water, and thence, under the road, in stone drains to a stone reservoir built by
" the road side, and from this again, by gravity, into troughs and biscuit barrels built into
" stone. The Pass being only 15 feet wide did not admit of any other plan being carried
Senafé. " out. Some tubes were also driven at the foot of the Senafé Ghat. At Senafé, six
" Norton's tubes were driven for drinking water, near a dry watercourse leading to two
" ponds about 9 feet deep. Drains were cut in all directions through the swampy ground
" leading to the ponds, and filled with broken stones. The water in the ponds was
" dammed back, and the overflow carried off by a stone duct to the drinking-troughs
" below; eight Norton's tubes were driven alongside the troughs, and were worked by
" muleteers during watering hours. A large drain, lined with stone, fed also from the
" ponds, led to a large reservoir, and this supply was pumped through tubes into
" casks, for the horses. A Bastier chain-pump was fixed over a well lined with stone, and

"supplied other troughs for the use of the Transport Train. At Guna-Guna, the "drinking-water was provided by means of the tubes, and the water for the drinking-troughs was led off from an irrigating channel, and regulated by means of a small "sluice. Guna-Guna.

"At Focada water was found draining over rock, about 5 feet below the surface. "Reservoirs had to be excavated to catch this drainage, and portable hand-pumps were "fixed. The reservoirs being filled up with stone, Norton's tubes were fixed in them. Focada.

"At Adigrat a small stream flowed through the field work, emanating from a "swampy pool outside. Rock was met with at 5 feet below the surface, which prevented "the tubes being driven for a supply. The pool, in a few days, became so puddled from "animals walking into it, that it became necessary to clear it out and fill it with stones. "A trench was dug in the direction of the stream and filled with stone, and at three "different spots tubes were fixed in excavated wells. The channel was enlarged, and "lined throughout with stone, and the water dammed back at three different places in its "length. The overflow followed the natural channel, which was dammed again lower "down, and the water taken off through sluices to troughs and tubs for the animals. Adigrat.

"At small passing stations tubes were driven for drinking water, and metalled slopes made into pools and streams for the animals. Small stations.

"The supply at Antalo was derived from a succession of pools, drinking water being "procured from the tubes driven in their vicinity, and metalled slopes down the steep "banks made into the pools, enabled the animals to drink. Mules and horses will rush "in out of their depth, if not prevented by stout poles fixed across the drinking places, "at about five feet from the water's edge. Beyond Antalo the pumps were driven daily, "but in many cases it became absolutely necessary to dig small wells and fill them with "stone before fixing the pump. In all these cases portable hand-pumps would have "answered equally well, and, after long marches, the labour of erecting them would have "been much less. On the Wadela and Talanta plateaus, the supply was derived from a "few pools, and the water generally was within a few feet of the surface, draining over "basaltic trap, and no increase of supply was to be obtained by increased depth. Antalo.

"In the vicinity of Magdala water was obtained from small holes dug in the ground, "which, after exposure for 12 hours, became so bitter and tainted as to be useless. A "tube was driven at the foot of Fahla with moderate success, but the quantity of water, "until dammed back below the tube, was scarcely sufficient to work the pump. Magdala.

"7. *In Conclusion.*—The experience of the Campaign has shown that one squad with "five mules equipped, as shown above with Norton's tube wells, will be sufficient to "accompany a column on the march, but to these should be added at least six of the "portable hand-pumps, with boxes complete.

"That a reserve of 50 of the tubes will be found sufficient for a campaign.

"That for all depôts Owen and Clinton's double-action pumps are admirably suited.

"That the Bastier chain-pumps are also very useful, but the weight of the pipes, "and also of the wheel, are drawbacks, and the wear of the washers, unless the pipes are "set exactly plumb, is very great.*

"The portable force-pumps will also be found extremely useful for filling from tanks "into water carts."

From the experience of the Abyssinian Campaign the following deductions were made:— General deductions from the experience of the Campaign.

* Since the date of this Report, the weights have been much reduced.—(*Ed.*)

Drinking arrangements desirable.

The first essential after pumps and troughs have been put up is, that the number of animals allowed to approach and drink out of the troughs at one time should be limited in exact relation to the supply of the pump, *i.e.*, the water level in the trough should remain a constant 4 or 5 inches in depth. If this is carried out the animals not only drink more quickly but, having their muzzles well buried, have an instinctive feeling that there is plenty of water and remain quiet. The reverse is the case when the drinking capacity of the animals is in excess of the supply furnished; the water is soon reduced to a mere film running over the bottom of the trough and then occur scenes such as those daily witnessed both at Zula and Kumayli.

Troughs.

The troughs should be strongly fixed into cradles or trestles, and backed up with stone: they should range from 2 to 4 feet in height, be about 2 feet wide, and 6 to 7 inches in depth, and have a length, if possible, of 120 feet.

Entrances and exits should be built to admit and pass out only four animals, at one time; the entrance of a continuous 120 feet of trough should be at each extremity, and the exits from the centre, where a wall to partition off the trough into two separate portions should be built.

The animals are thus collected at the extremities (mules and asses at the lower, camels and horses at the higher), where there is plenty of space.

At the centre the space is not required as the animals are walked off after having had their draught, and are quieted with their fill of water.

Capabilities of Norton's and Bastier's pumps.

A Norton tube pump cannot draw water over 25 feet from the surface, and at that depth its supply is very small. At 20 feet from the surface it yields—two men relieving each other—about 4 gallons per minute. At 16 feet about 5 gallons per minute, equal to the watering of about 100 mules per hour; at 12 feet nearly 6 gallons, and will supply about 120 mules in the hour.

It cannot be driven through soil in which boulders or hard rock abound. In only one such instance, and that a fortuitous one, did it succeed at Kumayli. It had struck a stone and had been twisted just as it reached water, at the luckily small depth of 11 feet. At the foot of the Senafe Ghat it was unsuccessful, and wells had to be dug in which the tubes had to be placed in all places below the Ghats. In all positions where the dry bed of a stream runs through alluvial soil, the tube can be successfully driven, and where there is a plentiful supply of water it will furnish sufficient for three mules at one time.

From actual experiments at Kumayli, it was ascertained that the water supply of a "Bastier" chain pump was equal to that of 12 Nortons. At Kumayli one kept 45 mules regularly drinking, the Norton's only three at one time and four the next alternately, each worked by one man. The "Bastier" once in position is difficult to injure, and the suckers, which wear out in time, can be renewed in a few minutes.

In trying the "Bastier" chain pump, working hard 40 revolutions per minute, a result was obtained of 8 cubic feet of water per minute, equal to 50 gallons. With 30 revolutions, 5·765 cubic feet, equal to 36 gallons were obtained. The "Bastier" hence gives on an average about 2,200 gallons per hour, two men working.

Results of experiments on animals drinking.

The following experiments on animals were also tried at Kumayli:—

32 camels and 8 mules began to drink at 3.28 p.m., had finished at 3.30 p.m., and had drank 1″ of water in the trough, equal to 148 gallons, to which must be added 72 gallons of Bastier time of working, equal to 220 gallons, which will give nearly 6 gallons each for camels and 4 for mules.

Again next day, 4.5 p.m., 21 mules and 40 camels drank; in two minutes they had

finished and the water in the trough was reduced $1\frac{1}{8}$", equal to about 250 gallons, giving $5\frac{1}{2}$ gallons for camels and $3\frac{1}{2}$ for mules.

Before the Bastier pump was received, some men, with assistance of a bucket and pump, were able to fill 1 inch of trough, equal to 11 cubic feet or 69 gallons, in seven minutes; and the following data were obtained by Captain Hills, R.E., who superintended the operations, and to whom we are indebted for some of the preceding deductions.

" 12 + 13 + 14 + 15 + 14 + 17 = 85 mules drinking in lots as above took fifteen " minutes = $2\frac{1}{2}$ minutes each lot, and reduced the water in the trough 2" in depth, " showing the numbers were too great.

" (1.) A = 22 + $\frac{1}{7}\frac{2}{1}$ of 11 feet = 45 cubic feet of water, then 15 + 16 + 10 = 41
" mules took 9 or 285 gallons to drink water $\frac{3}{8}$" diminished.

" (2.) A = $\frac{8}{8}$ $\frac{11}{4}$ + $\frac{9}{8}$ of 11 = 116 gallons.

" 12 × 12 + 8 + 10 + 9 + 13 + 8 + 9 + 11 + 9 + 10 + 10 = 121 mules took 24 " minutes to drink and left water exactly as it was at the commencement.

" (3.) A = $\frac{24}{7}$ of 11 + 22 = 60 cubic feet = 375 gallons.

" That 37 mules in eleven minutes left trough as before—

" A = $\frac{1}{7}\frac{1}{1}$ of 11 cubic feet = 17·3 cubic feet = 108 gallons.

" We have—

				Gallons.
" (1.)	85	mules	drink	285 = 3·3
" (2.)	41	"	"	116 = 2·8
" (3.)	121	"	"	375 = 3·1
" (4.)	37	"	"	108 = 2·9
				12·1
				3 gallons.

" Gives a rate of 3 gallons per mule.

" 140 camels emptied the trough in 42 minutes, 11 drinking at a time.

" A = $\frac{4}{7}\frac{2}{1}$ of 11 + 66 = 825 gallons,

" about 6 gallons per camel—these had not had water for three days.

" The following experiments were taken to test the quantity of water necessary for " cattle. They were for the supply offered for Zula, and were watered only once a-day " at 12 o'clock, when all the transport animals were clear.

					Gallons.
" 25	drinking	took	4	minutes	= 127
" 22	"	"	4	"	= 120
" 22	"	"	3	"	= 112
" 30	"	"	$0\frac{3}{4}$	"	= 163
" 36	"	"	$3\frac{3}{4}$	"	= 173
" 36	"	"	$3\frac{1}{2}$	"	= 170
" 171	"	"	$28\frac{1}{2}$	"	= 865

" Almost exactly 5 gallons each. The numbers were increased as the Bastier at first " gained and, latterly, lost."

At Kumayli the water derived from wells sunk some 10 to 12 feet in the bed of tor-

rent, through rock of metamorphic formation, was raised by dipping and examined, November 12, 1867, by Assistant-Surgeon Martin, M.D., who reported as follows on it:—

"*Physical Qualities.*—When first drawn, slightly turbid. The turbidity passed off "when allowed to stand; sediment, sandy; no peculiarity of taste or smell; reaction, "neutral; organic matter, absent; lime, some present; chlorine, a slight trace; sulphuric "acid, a trace. This water was considered excellent and wholesome."

Analysis of water by Assistant-Surgeon Martin.

When passing through Kumayli, December 30, 1867, Dr. Martin examined the physical qualities of some water raised by the American pump, and reported the water perfectly clear and good. He further reported as under.

"At Suru the water was derived from a running stream, and from a spring at the "head of the Pass. Rock formation, metamorphic gneiss and schists. Water was "examined November 5, 1867: physical qualities, perfect; reaction, neutral; organic "matter, absent; lime, some present; chlorine, a trace; sulphuric acid, a trace. This "water was considered by Dr. Martin excellent and fit for use. At a subsequent period, "owing to bad management, the water was rendered turbid by the traffic; but afterwards "this point was attended to and the water was very good.

"At Rahagedi the water was derived from a beautifully clear running stream. For- "mation metamorphic. It was examined November 8, 1867. Physical qualities, quite "clear; very slight sediment when allowed to stand 12 hours; no peculiarity of taste or "smell; reaction, neutral; organic matter, absent; lime, some present; chlorine, a trace; "sulphuric acid, a trace. This water was considered by Dr. Martin excellent and whole- "some.

"The water at these three places closely resembled each other, which might be easily "imagined as the rock formation was metamorphic throughout. It is laid down as a "general rule by Professor Parkes that the water derived from metamorphic regions is "generally very pure."

These rough analyses were made before there was a possibility of organic contamination by camp followers and transport animals.

CHAPTER XXXI.

MEDICAL DEPARTMENT.

THE details of the equipment of the hospital ships furnished from England, with their establishments, stores, and medical comforts, are fully shown in Chapter IV., pages 78 to 84.

British Service.—Dr. S. Currie, M.D., C.B., with the local rank of Inspector-General, was the Head of the British Medical Department, and Principal Medical Officer of the Expedition, with Staff Assistant-Surgeon W. T. Martin, as Secretary. Composition of the Medical Department.

In addition to the Regimental Medical Officers, the General Medical Staff consisted of a Sanitary Officer, three Staff Surgeon-Majors, ten Staff Assistant-Surgeons, and, besides the Medical Staff ashore, there were three Staff Surgeons and three Staff Assistant-Surgeons employed in the Hospital Ships. British Service.

Indian Service.—There were two Deputy Inspector-Generals of the Indian Service, one was stationed at Zula, and the other accompanied the 1st Division in advance. There were two Field Surgeons, one to each division, and two Medical Storekeepers, as well as a Surgeon in charge of the General Hospital at Zula, and two in charge of hospital ships. Indian Service.

SECTION I.—BRITISH SERVICE.

The general medical arrangements have been shown in detail in the preceding Chapters, and the following extract from the Report of Dr. Currie, shows the working of the Department during the campaign:— Dr. Currie's Report.

" *Cooking Utensils.*—Those for the troops were of the kind in common use in Indian " cantonments, and it is difficult to conceive anything more unsuitable for campaigning " in a mountainous country like Abyssinia, where it was a matter of pressing necessity " to reduce the weight and bulk of baggage to the lowest possible extent. Cooking utensils.

" The canteen equipment of hospitals was equally ill-adapted for field service.

" It was unfortunate that an adequate supply of field canteens had not been sent " out from England for the Abyssinian Expedition.

" *Clothing.*—The clothing of the troops was well adapted to the climate and service. " This consisted of serge and Kakee suits, flannel shirts and belts, woollen socks, boots " and leggings, the bedding of blanket and waterproof sheet. The bedding and spare " clothing of each soldier was packed in a painted canvas bag, the whole weighing " 25 lbs. Clothing.

" *Rations.*—The scale of rations for the troops at Zula, and on the highlands as " far as Antalo, was nearly the same as that in use in India, with the exception of the " daily issue of two ounces of compressed vegetables and the increase of meat to 1½ lbs. Rations.

" The following scale was laid down for the troops which went beyond Antalo:—

" Flour or biscuit	1 lb.	" Sugar	1½ oz.
" Meat	1½ lb.	" Ghee	2 ozs.
" Salt	0⅝ oz.	" Compressed Vegetables	2 ozs.
" Tea	0½ oz.	" Rum	1 dram.

"As a matter of fact the troops were very fairly fed until they arrived at the River "Takazzie, when the native transport broke down, and upon which the Commissariat "mainly depended for the forwarding of their supplies from the Central Depôt at "Antalo.

"The effects of the failure of Commissariat supplies, and of the exclusive use of "beef and flour rations, will be noticed hereafter in connection with the health of the "troops at this period.

Sick carriage. "*Sick Carriage.*—In every climate and country where war has been carried on, the "subject of the best description of carriage for the sick and wounded has proved of "great difficulty, and regarding which great diversity of opinion has prevailed.

Ambulances. Cacolets. "For the Abyssinian Expedition, ambulance carts were provided, but for obvious "reasons they were not of the smallest use. Cacolets were also furnished, but they "were not brought into play. The large Spanish mules which were alone suited to "cacolets were required for other purposes, such as the carrying of the mountain batteries, "and the transport of Stores in Maltese carts to the Highlands.

"It was fortunate that circumstances prevented cacolets being taken to the front, "inasmuch as the narrow and precipitous mountain paths would have rendered their "use extremely unsafe; and the same objection applied to camel kujavahs, of which a "considerable number were supplied.

"The carriage which proved the most useful was the dhooly for severe cases of "disease, and the pad-mule for convalescents, or slight cases.

Dhoolies. "Of the dhooly three kinds were provided, viz., the common Indian dhooly, the "Madras dhandy, and the MccGuire field hammock. In considering the relative merits "of these it may be observed that though the dhooly has the advantage of forming a "comfortable bed in camp it is objectionable on account of its great weight, which varies "from 90 lbs. to 120 lbs.

Dhandies. "The Madras dhandy is merely a light description of dhooly, and weighs about "46 lbs. This also forms a comfortable bed, and is comparatively light, and easily "carried.

MccGuire's hammock. "The MccGuire field hammock is constructed by lashing the hammock to an "ordinary dhooly-pole, and the weight is only 21 lbs.

"Though light, and easily carried over mountains, the hammock has the dis- "advantage of not forming a bed for the patient in camp, and the canvas invariably "becomes slack and baggy in the centre. The objections to the MccGuire hammock "might be got over by fitting inside the canvas a light wooden frame with tape bot- "tom, &c.

"For the dhooly and dhandy eight bearers at least are required, whereas for the "MccGuire hammock six efficient bearers suffice.

Dhooly-bearers. "The work of dhooly-bearers is very hard, and, consequently, a large number of "them knock up; it is, therefore, very difficult to maintain in anything like efficiency "this description of sick-carriage.

"In the Abyssinian Campaign the inefficiency of the bearers was greatly increased "by the nature of the country, and their physical deterioration from poor fare and pri- "vations.

"A dhooly-bearer is an animal hired to carry sick soldiers, and is not expected to "fall sick himself, and if he does, in nine cases out of ten he is supposed to be a "schemer.

"From what has now been stated it will be apparent that a really good description "of carriage for sick and wounded, in mountain warfare more especially, has yet to be "invented.

"The proportion of dhooly carriage allowed in the first instance was five and then three per cent., and soon after arriving on the highlands the scarcity and difficulty of transporting supplies rendered a further reduction of private and public followers imperatively necessary. The sick carriage was, therefore, fixed at one dhooly and two pad-mules per 100 fighting men, and 15 dhoolies to field hospitals. Proportion of sick carriage.

"This small proportion of sick carriage necessitated the formation of depôt hospitals along the line of route, these will be more particularly referred to hereafter.

"*Medical Stores.*—A large supply of medical stores was dispatched from Bombay, and two depôts were established, one at the base of operations and the other at Antalo, eventually a small depôt was moved forward to Dildi. Medical stores.

"*Medicine Chests.*—For board ship use, between India and Annesley Bay, two small medicine chests were supplied, numbered 1 and 2, the former contained medicines and the latter instruments and appliances. Medicine chests.

"For the field, regiments were supplied with a double set of chests of a larger size, numbered 3 and 4. Wings of corps and batteries of Artillery with one pair.

"The chests marked '3' contained medicines only, and those marked '4' surgical instruments and appliances.

"The field medicine chests were made and fitted up in Bombay, according to the scale laid down for field panniers in the 'Medical Regulations.'

"The supply of medicine which they contained was sufficiently large and varied, and the only objection that could be taken to them was on account of their excessive weight. A pair of chests complete weighed from 180 to 200 lbs.

"The best description of field chests in the Expedition were sent with the Cavalry and Punjab regiments from the Bengal Presidency. The Bengal chests or panniers were made of cane-work, and rendered waterproof by a painted canvas cover. The weight of a pair did not exceed 100 lbs. Two pairs would suffice for a European regiment.

"*Medical Comforts.*—A very ample supply of medical comforts in the mixed or assorted form was provided and packed in wooden boxes, weighing 80 lbs. Each regiment on leaving Zula was supplied with four, and batteries of Artillery with two cases, and a considerable reserve stock was carried to the front by the Commissariat. Medical comforts.

"*Hospital Clothing.*—This consisted of 20 suits of the ordinary Indian clothing for a regimental or field hospital, and half that quantity for a battery of Artillery; the deficiency of land transport rendered it necessary to minimize the hospital and every other equipment to the lowest point compatible with the efficiency of establishments. Hospital clothing.

"*Instructions to Medical Officers.*—Before the departure of the Expedition from the base of operations, a Circular Memorandum was issued for the purpose of directing the attention of officers of the Medical Department to the various points of interest which would probably present themselves in the course of the campaign; and to the duties of Medical Officers generally on field service. Instructions to medical officers.

"In General Orders rules were published for the conservancy of standing camps.

"*General Medical Arrangements for the Expedition.*—The regimental hospital system, which is so much in favour in our service, was maintained in all its efficiency; and the other arrangements for the sick, on the general hospital plan, to which I am about to refer, may be considered as subsidary to it. General medical arrangements.

"At the base of operations ample and excellent hospital accommodation was provided for European officers and soldiers in three hospital ships, carefully fitted up in England, and provided with a staff of Medical and Purveying officers and Army Hospital Corps men.

Hospital Ships.

"These three ships were calculated to accommodate 58 officers and 600 men, and "they were placed under the superintendence of a Staff Surgeon-Major, who was also "charged with the administrative duties at Zula.

"One Staff Surgeon-Major was appointed to each division of the force, and the "Sanitary officer was also of the same rank.

Hospitals.

"For the sick of the Indian troops two sailing-vessels were fitted up as hospital "ships, and a large general hospital was established on shore for the reception of camp "followers, and one for a similar purpose was organized at Kumayli, at the foot of the "Pass.

"In the Pass itself, 49 miles in length, three small hospitals, in charge of Staff "Assistant-Surgeons, were established for the reception of Europeans and camp followers "employed in the Pass.

Depôt Hospitals.

"On the highlands, one field and two depôt hospitals, with full establishment of "Medical Officers, and 1st and 2nd class servants were organized.

"The 1st depôt hospital was established at Senafé, the 2nd at Antalo, and the field "hospital accompanied the advance column, and duplicates of those establishments "were organized for the native troops.

"This, the original programme, was fully carried out; but circumstances subsequently "led to a much larger development of the depôt hospital system than was originally "contemplated, and the means at my disposal fortunately enabled me to carry it out to "the extent necessary to meet the requirements of the Service. In consequence of the "sick carriage having been reduced to one dhooly and two pad-mules per 100 fighting "men, the only way of meeting any difficulties that might arise in regard to the sick was "to organize depôt hospitals at the different posts on the line of route.

"Thus in the 120 miles between Senafé and Antalo, one was established at Adigrat; "and in advance of Antalo hospitals were extemporised for the reception of both Euro-"peans and native sick at Dildi, north of the Wandatch Pass, at Sindee, on Wadela "Plain, and the last on the Talanta Plateau, on the right bank of the Bashilo.

"The depôt hospitals were both convenient and useful; they relieved the advancing "column of a heavy encumbrance, and the sick derived benefit from the rest and comfort "of stationary hospitals.

Field Hospitals.

"For the attack on Magdála, the two field hospitals of the British and Indian Services "were reserved. These were efficiently equipped, and received the wounded on the 10th "and 13th April; and on the return march to the coast they picked up the sick of the "depôts established at 10 different posts on the line of 400 miles between Magdála and "Zula.

Arrival at Zula.

"The troops composing the force began to arrive in Annesley Bay early in December; "the 33rd, from Kurrachee, was the first European corps to arrive, and the 26th Came-"ronians the last.

"With the exception of the 3rd Dragoon Guards, all the corps destined to proceed "beyond Antalo had arrived by the beginning of February.

"A large camp was formed on the sandy plain at Zula, and for several weeks the "force assembled there was of considerable strength.

"The conservancy of the camp was well attended to, dead camels and mules were "removed to a distance and burnt, offal destroyed, and the latrines kept in good order.

Climate.

"At that season of the year the climate of the lowlands, though at all times to "a certain extent enervating, was tolerably good, the nights were pleasantly cool, but the "mid-day sun was powerful, the thermometer rising to 85° and 90° in tents.

Fatigue duties.

"The fatigue duties were heavy and involved much exposure to the sun; large parties

" were employed daily in various ways, such as pumping condensed water out of the tanks " into the troughs, for watering many thousand horses and transport animals, removing " sleepers for the Zula and Kumayli railway, &c. &c.

" The health of the troops while encamped here was very satisfactory; slight bowel " complaints were somewhat prevalent, especially among new arrivals. Health at Zula.

" These attacks were probably induced by exposure to the sun, and drinking too " copiously of condensed water, which was sometimes rather brackish.

" The great sickness and mortality which at first prevailed on the lowlands amongst " mules and horses, caused the 3rd Cavalry and Artillery horses to be early sent up to " Senafè; the European and Native troops soon began to follow, but at first in small " detachments, on account of the scarcity of water and provisions. Advance to the plateau.

" At this early stage, the great difficulty was the forwarding to Senafè Com- " missariat supplies in sufficient quantity to form a depôt there. While the road through " the Kumayli Pass was being made, stores were forwarded from Zula to the foot of the " pass on elephants and camels, and thence to the plateau by mules and bullocks.

" Although great exertions were made in this way, no great amount of success was " attained until the Pass was made practicable for wheeled vehicles.

" On the 24th January, the first convoy of bullock carts, each carrying 750 lbs., left " Zula for Senafè; the experiment proved entirely successful, and from that moment the " great difficulty of transporting supplies from the seaboard to the highlands was sur- " mounted.

" Convoys of bullock carts, and of Maltese carts drawn by Spanish mules, and of " Shoho bullocks, were now leaving Zula daily, and a large Commissariat store was soon " established at Senafè; and from thence supplies were forwarded to Antalo, partly by " our own transport mules, but chiefly by Abyssinians, who contracted to carry them on " mules, donkeys, men, women, and children, at so much per package.

" From January to March, troops were continually moving up to Senafè, and in the " same manner passed on in succession to Antalo, which is about half-way to Magdâla.

" The first five marches to Senafè proved of infinite advantage to the efficiency of the " advancing force, inasmuch as the difficult nature of the road through the Pass at once " tested the physical capabilities of the troops, and, enabled us to eliminate those who were " sickly or unfit for hard work. Description of route.

" The mountainous aspect of Abyssinia was alone sufficient to convince anyone that " none but men in the highest state of health were fit to campaign in such a country; and " the small experience already gained enabled Medical Officers to select from the different " corps, as they passed through Senafè, 100 men, who were either sick, or too weak for field " service. Those were left at the Senafè depôt, and, with others of the same class left at " Zula, were eventually sent home by the overland route.

" The Shohos, the Mussulman inhabitants of the country extending from the seaboard " to Senafè, are a thin wiry people of middle stature, of Caucasian and not unpleasant " features; the hair on the sides of the head is worn in short corkscrew ringlets, and " frizzled on the top of the head; their clothing is a scanty calico garb, and personally " they are extremely dirty.

" The province of Tigré, the capital of which is Adoa, commences at Senafè, and " extends to some distance south of Antalo.

" At Senafè the first Christian village is seen. On arriving at Senafè, 7,400 feet " above the level of the sea, a great change was experienced in the climate. In January " and February, the nights were cold even to the freezing point, and the days were " generally hot, the daily range of temperature often amounting to 45° and 50°.

"At Adigrat, 37 miles in advance of Senafè, a military post and a depôt hospital "were established. In this, the first section of the road on the plateau, the villages are "small, and the houses constructed of stone and mud, and flat roofed.

"After passing Adigrat, the true Abyssinian type of house becomes universal, viz., "circular walls of stone, or long reeds, and long conical grass roofs, resembling exag- "gerated bee-hives.

"The country between Senafè and Antalo is entirely volcanic, and either undulating "or hilly, and always rocky and barren.

"Grassy plains were occasionally seen, and large herds of cattle. Scrub jungle, and "the stiff candelabra-shaped kolquoll, a cactiform euphorbia, are seen on every mountain, "while the mimosa, sycamore, cornida, wild olive, rose, and aloe, occupy the less elevated "localities.

"At Senafè, a plentiful supply of good water was obtained by means of Norton's "American tubes; but on the line of march to Antalo not a drop was procurable any- "where except at the encamping grounds, and then only in moderate quantity, from "stagnant pools or ditches, for no wells were seen in Abyssinia.

"The advanced column arrived at Antalo early in March, and the head-quarters "of the 3rd Brigade, a large central Commissariat depôt, and depôt hospitals for "Europeans and Native sick, were established here.

"The European troops continued to enjoy a high degree of health, and after the "weeding they had lately undergone at Senafè there were not more than 30 sick and "weakly men to leave behind at Antalo.

"Bowel complaints, as heretofore, continued to be the prevailing disease, but few "were of a serious nature.

"The country in the vicinity of Antalo was found so be more productive of supplies "than any place we had yet seen; a market took place daily, and flour was purchased in "considerable quantities. This proved of great service to us, and it was forwarded with "our own imported provisions chiefly by native agency. Hitherto the laborious opera- "tion of road-making had been performed by the Native troops; but after passing "Antalo the Europeans had to take their share of the work.

"The 1st Division, consisting of the 1st and 2nd Brigades of Infantry, Cavalry, "and Artillery, comprised all the troops destined to proceed beyond Antalo.

"These now began to move forward, and the Commander-in-Chief left on the 12th "March.

"Soon after passing Antalo the province of Lasta, ruled by Wagshum Gobazi, is "entered, and there the mountains are higher, and the country more difficult and "impracticable than any in Abyssinia.

"After crossing the Alaji and Debar Passes, both 10,000 feet high, Lake Ashangi "was arrived at.

"This lake is a fine sheet of water, about five miles in length and the same in "breadth, and surrounded by an amphitheatre of lofty hills. The depth of Lake "Ashangi was ascertained to be 102 feet.

"The line of route then carried us to Lat and Dildi, where another military post "was established, and where a depôt hospital was likewise organized for Europeans and "Natives, but fortunately there were not many of either class to drop here. At this post "too the large reduction of camp equipage and personal baggage previously adverted to, "took place, and from this point on to Magdāla no troops could have possibly been in "lighter marching order.

"On the 26th March, the head of the column ascended the great Wandach range of

"mountains, 10,500 feet in altitude, and about 80 miles from Magdāla. On attaining "the top of this Pass, a heavy storm of hail and rain took place, and in consequence of "the tents not having come up, through the slippery state of the steep ascent, the troops "were exposed to its fury during a long and bitterly cold night.

"I may mention that the famous koussoo tree (*brayera arthelmintica*), one of the "Rosacæ, was seen here in great abundance, in the sheltered valleys on both sides of the "Wandach range.

"The koussoo is a tall handsome tree, leaves light green, branches wide spreading, "and from the upper ones dry flowers of a brownish colour were seen hanging like "branches of blighted grapes.

"The bark of the tree resembles the elm, thin, and peeling off in successive layers.

"After passing the Wandach Mountains, the country beyond, and to within a "a short distance of Magdāla, was open, fertile, and comparatively level; but natural "difficulties of another description had now to be encountered, viz., the passage "of the formidable chasms of the Takazze, Jedda, and Bashilo Rivers.

"On the 28th March, the Takazze was crossed by the leading brigade. The river "here, comparatively near its source, is but a small stream, but it afterwards assumes "very large proportions, and becomes one of the principal tributaries of the Nile.

"The descent from the right bank is tolerably easy; the ascent of the left bank, on "the other hand, is excessively steep and difficult, and 2,700 feet high. On the face of "this our Pioneer Force constructed a narrow zigzag bridle path, three miles in length, and "by which the troops and baggage were enabled to ascend to the Wadela Plain. Our first "encampment on this plain was 10,450 feet above the level of the sea, and the cold at "night was very intense, 7° below freezing point.

"During the progress of the Expedition through the province of Tigré and Lasta, Climate.
"the climate proved very favourable to the health of the troops, though the nights were "often intensely cold, and the mid-day sun scorching hot. The daily range of tempera-"ture was so great that the nights might, without much exaggeration, be described as "Siberian, and the days tropical. Notwithstanding these great extremes of temperature, "the troops were very healthy, and this may be mainly ascribed to the remarkable dry "state of the atmosphere, and the fine climate of Abyssinia at that season of the year.

"The long ascents and descents of mountain passes and formidable ravines were "excessively fatiguing, and demanded greater physical exertion and endurance than "British troops have probably ever undergone. The effect of this severe training was "shown in their increased capability of making long marches day after day with com-"parative ease to themselves.

"At Sindi, on the Wadela Plain, another depôt hospital was established, but "the health of the troops continued so satisfactory that the number of sick left here did "not exceed 20 Europeans, and about double that number of Natives.

"It was about this point that we joined the King's Road, as it was called, the road "which Theodore's army had lately made for his big guns marching from Debra Tabor "to Magdāla, and on arriving at the great Jedda Ravine, we found on both sides of it "a well-made road, 30 feet wide.

"The descent from the right bank was 3,000 feet, and very steep, and in the bed of "the river there were only a few pools of bad water. During the rains the Jedda is "said to be a large river.

"The ascent of the left bank was 2,800 feet, and very steep, the distance from "the right to left bank was about 10 miles. The Talanta Plain, which commences "here, is about 12 miles broad, and extends from the Jedda to the Bashilo. The soil "is black, and the supply of water scanty and bad.

Scantiness of supply.

"In consequence of the failure of native transport in our rear, supplies now began "to run short, and the Force was delayed several days in this plain, until the natives were "prevailed upon to bring in supplies from the neighbouring district.

"At this time the weather became sultry, and thunder storms, with heavy falls of "rain, occurred daily.

"The duties of the troops, from the time they crossed the Takazze, were heavy, and "outlying pickets without tents necessitated much exposure to rain. The camp followers "were still worse off, as few of them had tents, or were protected from the weather in "any way. Bowel complaints, produced by bad feeding, bad water, and exposure to "rain, now became prevalent, both amongst Europeans and Natives. Fortunately the "nights were less cold, otherwise the troops and followers would have suffered in health "more than they did.

"Orders having been issued for crossing the Bashilo, the last depôt hospital for "the reception of sick and weakly men was established on the Talanta Plain, near the "bank of the river; and early in the morning of the 10th April, the 1st Brigade "descended to the Bashilo, and the remainder of the Force followed a few hours later.

"The descent to the river was 3,900 feet, and excessively steep. The road lately "made by Theodore was wide and in good order. The river itself was a muddy stream, "about 2 feet deep.

Magdāla.

"Magdāla is about 10 miles from the Bashilo, and the troops emerged from the "latter by a valley leading to the highland. The stronghold of Magdāla consists of "three high mountain forts; and, on approaching from the north, 'Fahla' is first come "to on the right, then 'Selassie' on the left, and Magdāla itself is seen behind, and "between the two more advanced posts.

"In the forenoon of the 10th, the 1st Brigade advanced from the Bashilo, for the "purpose of making a close reconnoissance of 'Fahla,' and before which it arrived about "four o'clock, after making a detour over a steep and difficult country in a very hot day.

"No sooner had the brigade arrived in that position than a battery of heavy guns "opened fire on our troops. Theodore himself was on 'Fahla,' and directed their "ineffectual cannonade.

"This preliminary operation was soon followed up by his troops rushing down from "'Selassie' and 'Magdāla' to attack us on the open country, and in doing so they "bravely attempted to charge our guns and turn our flank; but the fire to which they "were exposed from our rockets, steel guns, and Snider rifle was so deadly that, after a "short resistance, the Abyssinian troops were completely beaten and dispersed.

"The loss which they sustained was calculated at 700 killed, and 1,200 wounded, "including many of their chiefs and leaders. This was the first time that the Snider "rifle had been tried against a living target; and in the opinion of everyone, it proved "itself a very effective weapon. On our side only one officer and 19 rank and file were "wounded, and of these six were British soldiers.

"This engagement disorganized the Abyssinian Army, and the King himself then "saw the necessity for coming to terms with us, and with this view he despatched two of "the prisoners into our camp to sue for peace. In reply, the Commander-in-Chief "demanded the release of the prisoners, and the unconditional surrender of the King "himself.

"The first demand was complied with. On the evening of the 11th, the English "prisoners and German missionaries were released, and on the 12th the Foreign artizans "and their families were sent into the British camp, making a total of 62 captives, "including men, women, and children.

"'Fahla' and 'Selassie' were soon after abandoned, and the greater number of "Theodore's army laid down their arms. This army, together with followers (men, "women, and children), assembled there, amounted to about 30,000 people.

"But the proud spirit of Theodore refused to submit to the conqueror, and he, "with a small remnant of his army and a few desperate followers, shut himself up in "Magdāla, and which was bombarded, stormed, and captured on the 13th.

"'Magdāla,' in Abyssinia called an 'Amba,' or natural fort, is a flat-topped moun- "tain 9,000 feet in height, the sides of which are precipitous basaltic rocks, varying from "300 to 700 feet high, and is a place of great natural strength, and accessible by a "steep, narrow, and rocky path, which leads to an outer gate.

"After an hour or two of cannonading, chiefly for the purpose of breaking open "the gate, the fort was stormed by the British troops, and the dead body of the King was "found inside the second gate. He had often declared that he would not be taken alive, "and, true to his word, he died by his own hand.

"In this operation against Magdāla, only one officer and seven men were wounded. Losses of European troops.

"On the two occasions, viz., 10th and 13th, in which our troops were engaged, the "First and Second Field Hospitals were on the ground, and the wounded received "immediate attention.

"In the fort of Magdāla there were about 1,000 huts or houses, and a large number "of Abyssinian prisoners in chains, all of whom were immediately released.

"During the next four days Magdāla was occupied by a portion of our troops, and "the remainder were encamped on the lower ground in front of 'Selassie' and 'Fahla.' "In both situations water was procured from a great distance in small quantity, and of "the worst conceivable quality. Forage and grain were equally scarce, and the troops "had to submit to many privations.

"All the public property in the shape of valuables, books, and arms, having been "collected, on the 17th the troops were withdrawn, and 'Magdāla, on which so many "'victims had been slaughtered, was committed to the flames, and now only remains a "'scorched rock.'

"The troops present at the attack were, in round numbers, 3,470, of which 1,726 were "European, and 1,744 Native troops.

"The object of the Expedition having now been completely attained, the troops Return of the Expedition. "began their retrograde journey to the coast, by recrossing the Bashilo on the 18th "April,

"During the four weeks the Expeditionary Force was south of the Takazze, the Scantiness of necessary articles of food. "troops were badly fed, chiefly or perhaps entirely in consequence of the failure of the "native transport, by which supplies were intended to have been forwarded to the front "from Antalo and intermediate depôts. During the time referred to the troops were "almost entirely deprived of such necessary articles as sugar, rum, ghee, compressed "vegetables, and limejuice. Biscuit and rice were issued occasionally.

"Abyssinian beef, which every expeditionist will remember to the latest day of his "life, was excessively poor, tough, and hard; the ration of it was now increased to "2 lbs., and native flour, a mixture of wheat, barley, and bagereе was generally issued. "This was made into chupatties, and used instead of bread. 'Gogo,' or native bread, "thick circular cakes, also made of this flour, was largely used by the troops, but it was "insufficiently baked, and very indigestible.

"The part of Abyssinia through which the Expedition travelled was wretchedly poor, Poorness of the country. "produced no vegetables; eggs and fowls were scarce and dear; milk and butter were "occasionally procurable, and honey also; the latter was used as a substitute for sugar.

"Mutton was sometimes issued instead of beef, but less frequently than the flocks "of sheep seen in the country would have led us to expect. The reason assigned for this "was that the inhabitants of the country were unwilling to part with their sheep.

"Limejuice, on account of the scarcity of transport, was seldom issued to the troops "on the advance to Magdāla; but from Takazze, on the return march, limejuice was "issued regularly.

Sickness increasing. "The hardships of being restricted to such poor and monotonous fare as beef and "flour was beginning to tell sensibly upon the health of the troops; bowel complaints "were on the increase, and every man felt that he was losing substance; when fortu- "nately the Takazzé was arrived at, and the depôt of Commissariat supplies found there "gave new life to everyone.

"With better rations, and the luxury of a dram of rum daily, both European and "Native troops rapidly improved in health.

"Muleteers, dhooly bearers, and other public followers who had been exposed to "greater hardships than fighting-men, continued sickly, and as we came along large "numbers were picked up at the depôts, and carried on, for none could be or were left "behind in the country. By the time the Expedition had returned to Senafè, on the "4th May, the sick in camp amounted to nearly 300, and of this number about three- "quarters were Natives, chiefly camp followers.

"Though this (April and May) was the hottest season of the year, we found the "climate delightfully cool and pleasant.

Supply of water. "In another part of this Report I have adverted to the scanty supply of water "which the province of Tigré generally afforded. In Lasta, water was more abundant; "small mountain streams were frequently met with, and the quality of the water was "generally good.

"In the Wadela and Talanta Plains the supply of water was exceedingly scanty, "and even worse in point of quality, I think, than in Tigré, while at Magdāla water was "procurable with much difficulty, and the quality was abominably bad. It is true that "every soldier was provided with a pocket filter, but I fear they were not made much "use of.

Natives of Abyssinia. "Before taking leave of the highlands of Abyssinia, I may observe that the natives, "though extremely poor and mercenary, were uniformly quiet and civil; they are proud "of the distinction of being Christians, and never fail to display the blue cord which "they wear round the neck, the emblem of their creed.

"In features the Abyssinians do not differ much from the Shohos, and, though the "national costume—if it deserves the name—is somewhat different, they are equally "dirty in their persons; and this will be easily understood when it is mentioned that their "ablutions are only performed once a-year, viz., on St. John's Day.

Men. "The men are of middle stature and thin, for I never saw a stout Abyssinian, or "one even approaching to obesity; they either wear no beards, or short beards and "whiskers; the hair short, or long and plaited in rows over the head, and tied behind.

"A pat of butter in process of liquefaction is often seen on the head, but whether "it is put there for an ornament or useful purpose I never heard.

Women. "The women, whose looks are passably good, wear the hair much in the same style as "the men, either short, or more frequently, elaborately plaited.

"The leathern petticoat, so universally worn, though probably a durable one, is by "no means a becoming garb.

Children. "The child is always carried on the back with its small head projecting out of a "leather bag. Abyssinians use animal food largely, both in the raw state, called

" 'brundo,' and also cooked. 'Gogo,' a heavy kind of bread made of mixed flour, is " eaten with butter and red pepper. The more aristocratic bread, called 'teff,' is light " and spongy. This is also eaten with red pepper.

" The national drink is tedge, a fermented liquor made from honey, and which is " rather pleasant to the taste, something between cider and ginger beer. National Drink.

" When the Force had returned to Senafè in the end of May, Kassai, Prince of " Tigré, came from Adoa for the purpose of seeing the Commander-in-Chief, and our " troops, &c.

" This chief, who might have disturbed our communications in his territory where " our line was weak, was now rewarded for his friendly conduct by receiving large " presents of arms and ammunition, some mortars, and a battery of mountain guns.

" Soon after the advance column began its retrograde march to the coast, orders Re-embarkation. " were given for the re-embarkation of the stores and munitions of war which had " accumulated at Zula, and the troops at that end of the line began to embark on the " the 15th May.

" The European portion of the Force, consisting of four companies of the 45th Regi- " ment, at Antalo; 26th Cameronians, at Adigrat and Senafè; and 5th Battery 25th " Brigade, Royal Artillery, left early, and were amongst the first to embark.

" The Magdala troops marched from Senafè by column daily, and on arriving at " Zula they went straight on board the transports allotted to the different corps. The " embarkations were so expeditiously managed that the last European detachment, viz., " the 10th Company Royal Engineers, embarked on the 5th June.

" It was very desirable to get the troops away with the least delay possible, for the " heat was then very intense. At Kumayli, at the foot of the Pass, the thermometer in " tents stood at 114°, and at Zula at 105°. Heat apoplexy was of frequent occurrence " amongst the shipping, and several soldiers were cut off by it.

" A few Native troops remained some time longer to enable the Commissariat and " Ordnance Department to remove the last of their stores, and on the 19th June, Zula " was finally evacuated by the British.

" Mr. Dufton, who was unfortunately killed by the Shohos in the Kumayli Pass, Remarks on the climate of Abyssinia. " when returning to the coast with the Expedition, remarks, in his book of 'Travels in " 'Abyssinia,' 'Soldiers will not believe what a climate Abyssinia is until they have " 'passed through the purgatory of the Lowlands, upwards and upwards, to the Paradise " 'of the Highlands.' While admitting the correctness of the above description of the " lowlands, I am not prepared to endorse to the full extent the opinion expressed in " regard to the highlands. At the same time, I have no hesitation in saying that the " climate of the latter far surpassed our expectations.

" Our experience of the climate extended over the cold and hot seasons, and, " though the power of the sun is often too great to be pleasant, its influence appears to be " modified by the great altitude of the highlands, inasmuch as it has not the same pre- " judicial effect on health that a tropical sun usually has.

" I have already mentioned the great daily range of the thermometer in the cold " months; but in April and May, which may be considered as the hot season, the range " of the thermometer was much less, and the midday sun was not then sensibly hotter " than it was in the previous months, when the nights were so intensely cold.

" Our experience led us to the conclusion that Abyssinia was a very healthy country " for Europeans, and this favourable opinion was formed, notwitstanding the hardships " of making long and fatiguing marches, exposure to cold, rain, and sleet, and the " habitual use of coarse and indigestible food.

"Fortunately our service in Abyssinia came to an end before the rainy season set "in, but there was abundant evidence of the rainfall being very heavy, and, according to "reports which we received, malarious diseases are then prevalent, especially near the "great rivers.

"Our Abyssinian experiences did not bring us in contact with many of the dangers "against which the Expedition had been duly cautioned.

"Wells were said to become a repository for the ova of certain insects, and "further, that the water of wells was often impregnated with poisonous principles which "exude from the leaves of plants hanging in the water. Such may be the case else- "where, but we saw no wells. Flies were not unusually numerous, nor their bite par- "ticularly troublesome. Snakes were rarely seen, and the hippopotami were evidently "afraid of British lion.

Remarks on the prevailing diseases and wounds.

"The average strength of the British Troops of the Expeditionary Force during "the 25 weeks they were employed in Abyssinia was 2,674; and as will be seen on "referring to the accompanying Summary Sick Return, the total admissions into the "hospitals on shore were 1,332, the latter being in the ratio of 49·81 per cent. to "strength.

"The total deaths in the Force, including 12 which occurred amongst the transfers "to the hospital ships, were 35, equal to a death rate of 1·30 per cent.

"I may observe that, though the figures above given show only the amounts of "sickness and mortality amongst the European troops, yet there was a remarkable "concurrence both in the prevailing diseases and extent of sickness and mortality "between the European and Indian troops. The only notable difference was, that while "the former did not suffer from scurvy at all, the latter did so, but not to a large extent.

"The prevailing diseases amongst the troops in Abyssinia were confined to fevers, "chiefly intermittents, and bowel complaints; the former accounted for 260 admissions, "or in the ratio of 19·51 per cent. of the total sick admitted, and the latter for 343 "admissions, equal to 25·75 per cent. of the total admissions.

"It thus appears that to fever and bowel complaints were due nearly one-half of the "whole of the admissions into hospital.

"It is impossible to state, with any degree of accuracy, what number or proportion "of the cases of intermittent fever originated in Abyssinia, or where relapses of the "disease previously contracted in India, from which every corps had come direct. "It is probable there were many of both classes; at any rate, it is certain that the "great extremes of temperature, cold nights and hot days, were eminently calculated "to produce relapses of this disease. But the diseases of greatest prevalence and "fatality in Abyssinia were bowel complaints, either in the mild form of diarrhœa, or "dysentery. As already mentioned, 343 admissions were for bowel complaints, and of "the 35 deaths from all causes that occurred in the campaign, 18 resulted from "dysentery.

"I was not able to ascertain whether the natives of the country suffered much from "bowel complaints, but the prevalence of this class of diseases was not confined to the "European portion of the Force, for it was observed that the Indian troops were "affected nearly in the same proportion. The only peculiarity worth mentioning "regarding the dysenteric form of the disease, was the rapid progress of bad cases to a "fatal termination, and in all such, dissection revealed ulcers in an advanced state of "ephacelation.

"It seems probable that the prevalence of bowel complaints amongst the troops "was attributable to a combination of causes, the more efficient of which were

"great alternations of temperature, bad water, and coarse and insufficiently-cooked "food.

"*Tænia.*—That tapeworm is very prevalent amongst the inhabitants of Abyssinia Tænia.
"is beyond all doubt, and they themselves believe that the great prevalence of this "parasite is due to one cause, viz., the habit of eating raw meat or 'brundo,' and this "opinion is corroborated by the fact of the European prisoners who indulged in this "habit having suffered from tapeworm.

"Raw meat, or 'brundo,' is eaten by every Abyssinian, either immediately after "the animal is killed and the flesh still warm, or when not more than 24 hours old; "meat that has been longer killed is cut up into long sausage-like strings, dried in the "sun, and afterwards cooked.

"Though a few cases of tapeworm occurred amongst the troops, it is doubtful that "they were contracted in Abyssinia; no doubt some length of time is requisite for the "development of the parasite; it is therefore possible that tapeworm may yet show "itself amongst the troops that composed the Expeditionary Force.

"The ova of tapeworm, which observers in India report having seen in ration beef "there, floating in a jelly-looking fluid, were not detected in Abyssinia.

"The ethereal extract of male fern, a liberal supply of which was sent to the "Abyssinian Expedition, on the recommendation of Professor Christian, of Edinburgh, "is certainly the most efficacious on the lininitie that I have seen used.

"*Insolatio.*—In the months of April and May, the heat at Zula and Annesley Bay Insolatio.
"was very intense. Cases of heat apoplexy were of frequent occurrence amongst the "shipping in the bay, and two officers and six soldiers succumbed to it.

"*Wounds.*—The surgical history of the campaign is easily told. In the actions of Wounds.
"the 10th and 13th April, two officers and 13 British soldiers were wounded; of the "former, one was slightly the other severely wounded; the wound which the latter "sustained was from a musket-ball, which passed through the left elbow-joint. An "attempt was made to save the limb, but the circumstances were unfavourable; the "daily marching and motion of the dhooly lighted up, after a time, inflammation in the "seat of injury, and it became necessary to amputate the limb.

"When this officer embarked for England, the stump, though not quite healed, was "doing well.

"One soldier was shot through the arm, breaking the humerus about the centre. "This case likewise did well. Another man was wounded in the head by a spear, and "three others were shot through the extremities by musket-balls.

"A memorandum will be appended to this Report, showing the sickness and mor-"tality in the Force during the entire campaign.

"*Invalids.*—333 men, equal to 12·45 per cent., were sent home; of this number Number of
"upwards of 200 were sent to England by the overland route, in the month of March, invalids;
"and the remainder, consisting partly of corps returning to India, and partly of sick and European troops.
"weakly men whose corps were going home overland, were sent round the Cape in one "of the hospital ships at the close of the campaign.

"The climate of Zula was so trying to health that every soldier who was sick or "too weak to proceed to the front, was sent away as soon as possible.

"A large proportion of the men thus sent home for change of climate will shortly "rejoin their corps.

"Before concluding this Report, I will add a remark or two about the hospital ships, Hospital ships.
'Golden Fleece,' 'Mauritius,' and 'Queen of the South.'

"These fine large steamers were fitted up in England for hospital ships in an

"admirable manner, and the accommodation which they afforded was very good; "though reported to be capable of accommodating 420 sick in cots, and 184 in ham- "mocks, the former number was quite as large as they could comfortably accommodate "in a tropical climate.

"The cots on the single tier and swinging principle is a great improvement on the "bunks with which the hospital ships sent to China in 1859 were provided.

"In the Abyssinian Expedition, the hospital ships were simply invaluable, and the "sick had the benefit of everything that could possibly minister to their comfort.

"As hospital ships now form an important part of the equipment of every expe- "dition, I trust I shall not be thought hypercritical if I endeavour to point out in what "respects these ships, in my opinion, were not altogether satisfactory. I am aware it "can be shown that their ventilation was amply provided for by several distinct and "separate systems, and no doubt it was sufficiently so for a temperate climate, but for "an intensely hot place like Annesley Bay or the Red Sea, something more active than "mere ventilation is required.

"Punkahs agitate the air, but they alone are not sufficient, some kind of appliance "is required that will produce a current of air (if cooled, so much the better) sufficiently "strong and generally diffused as to make a decided impression on the feelings of the "inmates.

"An apparatus on the principle of the Indian thermantidote would have this effect."

The following Memorandum shows the amount of Sickness and Mortality among the British Troops of the Force during the entire Campaign:—

Sickness and mortality among British troops.

Average strength	2,674
Total admissions	1,332
Ratio per cent. admissions to average strength	49·81
Total deaths	35
Ratio per cent. deaths to average strength	1·30
Total invalided	333
Ratio per cent. invalided to average strength	12·45

Casualties.

CASUALTIES.

Officers	Highlands	7
	Lowlands	4
	Total	11
Men	Highlands	17
	Lowlands	18
	Total	35

Officers' Deaths, caused as follows:

Officers' Deaths.

Diseases.	No.	Remarks.
Dysenteria Acuta	1	
Febris continua	1	
Apoplexia	1	
Morb. valv. cordis	1	
Hepatitis acuta	1	
Angina pectoris	1	
Emersio	1	Accidental drowning.
Insolatio	2	
Vulnus sclopetarium	2	1 accidental; 1 suicide.
	11	

Men's Deaths.

Men's Deaths.

Diseases.	No.	Remarks.
Dysenteria acuta	16	
,, chronica	2	
Febris inttermittens	0	
,, remittens	2	
,, typhoid	1	
,, continua	1	
Paralysis	1	
Aneurisma	1	
Hepatitis acuta	1	
Nephritis	1	
Nephria	1	
Insolatio	6	
Vulnus sclopetarium	1	Suicide.
Venenatio	1	Overdose of chlorodyne from private supply.
Total	35	

Distribution of Casualties by Corps.

Distribution of Casualties by Corps.

Corps.	Officers.	Men.
Royal Artillery	1	5
,, Engineers	1	2
3rd Dragoon Guards	..	2
1st Battalion 4th King's Own Royal Regiment ..	1	11
26th Cameronians	..	3
33rd Regiment	3	4
45th Regiment	1	8
Medical Staff	2	..
Military Store Staff	1	..
Veterinary Staff	1	..
Total	11	35

It would be tedious and unprofitable to enter minutely into the accounts of every transaction on board the hospital ships. The following report from Dr. Roch, in charge of the "Golden Fleece," will serve as a sample. It also will show the views of that officer with regard to improvements which might be made in hospital ships :—

Report of the Medical Transactions on board Hospital Ship "Golden Fleece."

Report by Dr. Roch on the hospital ship "Golden Fleece."

"On December 17, 1867, we opened hospital on board the 'Golden Fleece,' in "Annesley Bay, Abyssinia.

"The prevailing diseases during the remainder of this month were bowel affections, "principally diarrhœa, with two cases of dysentery. The attacks were mild in character, "readily yielding to treatment, and their cause (*cæteris paribus*) may be imputed to "drinking impure water.

Prevailing Diseases in December.

"In the absence of the men's medical histories' sheets, some difficulty was experi- "enced in selecting the cases which might be considered strictly sporadic, primarily "contracted in the country without a constitutional predisposition to the disease, the "result of former attacks in India or elsewhere; and in making the selection I have "included the cases of dysentery with those of intermittent fever, as diseases in which a "previous attack or attacks may be considered as acting the part of a predisposing cause, "from the susceptibility of old healed ulcerations to re-open and disintegrate.

"This impression, whether right or wrong, is the result of personal observation at the "*post-mortem* examinations of cases who have died of relapses of dysentery after an "interval of years, where the old healed, thickened, ulcerated patches were found re- "opened, and in some cases perforated, though the course of the fatal attack was in many "instances remarkably short.

"For the sake of simplicity, the following tabular Form is adopted; and though "strictly only intended to apply to intermittent fever and dysentery, the other zymotic "diseases, where they occur, are for convenience noted in the same Table :—

Diseases.	Primary Attacks contracted in Abyssinia.	Had previously suffered in India or elsewhere.	Doubtful Cases.	Total.
Febris, inter.	..	2	..	2
Dysenteria	1	1	..	2
Diarrhœa	3	2	..	5
Total	4	5	..	9

"The weather during this period was calm and fine, with occasional light northerly "and north-westerly breezes, which generally commenced during the afternoon and died "away towards evening.

"The average temperature in the shade, as registered by Fahrenheit's thermometer "(taken in gangway on upper deck) was, at noon, 84·22°; at midnight, 81·66°.

"The temperature of the sea-water by the ship's side, was, from 15 feet to surface, "80° Fahr., containing 5 ounces per gallon of saline constituents, and boiling at 213° Fahr.

January. "*January*, 1868.—Of the three cases of dysentery shown as treated during this month, "one only would appear to be a primary attack contracted in the country; the others were "relapses of former attacks in India.

" The majority of cases admitted were from the 33rd and 1st Battalion 4th Regiments, " at the time in transports awaiting disembarkation, and were not contracted in Abyssinia.

" Six cases of ulcers of the lower extremities were treated during this month, and " rapidly healed under the application of Condy's solution of permanganate of potass, in " various strengths adapted to the condition of each sore. One part in eight of water was " found most generally applicable.

" Occasionally the pure fluid was used instead of caustic to repress superfluous granu- " lations, while sometimes one drachm to eight ounces of water was found to be " conveniently strong.

" This is worthy of note, as some of the above cases, and many subsequently received, " obstinately resisted treatment by other agents; and its adoption, at my suggestion, on " board some of Her Majesty's ships of war then lying in Annesley Bay, was followed by " the happiest results. A piece of lint saturated with the solution was applied to the sore, " covered with gutta-percha tissue, and kept in situation by a roller which also gave " support to the limb. Such was the mode of application adopted in the 'Golden Fleece.'

Diseases.	Primary Attacks contracted in Abyssinia.	Had previously suffered in India, or elsewhere.	Doubtful Cases.	Total.
Febris, int.	1	2	..	3
Dysenteria	1	2	..	3
Diarrhœa	6	..	..	6
Total	8	4	..	12

" During this month, light north-north-easterly and north-north-westerly variable " airs and light winds prevailed.

" The atmospheric temperature taken in the shade, in gangway on upper deck, was, " at noon, 85·55°; at midnight, 80·12°.

" The temperature and density of the sea at the ship's side continued the same as " that of December, viz., 80° Fahr.; the boiling point being 213° Fahr., containing " 5 ounces per gallon of salt.

" *February* 1868.—The majority of the patients admitted during this month were February.
" composed of weakly men of the 1st Battalion 4th and 45th Regiments, on their arrival " at Annesley Bay.

" Six cases returned under the head of phthisis incipiens were admitted amongst the " above, and subsequently invalided to England *vid* Suez.

" Of the five cases of dysentery noted as admitted during this month, but one of " acute and two of chronic would appear to have been sporadic.

" One of the cases returned under the head of dysentery proved fatal in the short " period of 42 hours. The patient, Private W. H., 45th Regiment, had on the 5th of this " month a paroxysm of intermittent fever, and was sent on board the 'Golden Fleece' " the following day, on the night of which he was seized with violent cramps, vomiting, " and purging, quickly followed by collapse and death after the interval stated (42 hours).

" One case of typhoid fever occurred and proved fatal, in the person of Private " W. O., 1st Battalion 4th Regiment, who was admitted, suffering from diarrhœa, on the " 12th of the preceding month. He improved and continued convalescent until the 8th " February, 1868, when typhoid symptoms developed themselves, with the characteristic

'petæchia over the surface of the body. Peritonitis supervened, and the patient "gradually sank until 11 P.M., 22nd instant, when he expired.

"The *post-mortem* examination disclosed extensive ulceration of the small intestines, "with perforation at the lower portion of the ilium, which doubtless was the immediate "cause of death.

"The only case of sporadic ophthalmia that came under my notice during the Expe- "dition occurred this month, in the person of Serjeant R., Transport Train, admitted on "the 26th instant.

"The disease was contracted at the Suru Pass, and is supposed to have been caused "by exposure to wet, &c. The patient, still under treatment, was invalided to England "*viâ* Suez, in the 'Simoom.'

"The cases of intermittent fever and remaining diseases were not sporadic, the "patients having contracted them in India.

Diseases.	Primary Attack contracted in Abyssinia.	Had previously suffered in India or elsewhere.	Doubtful Cases.	Total.
Febris, int.	..	13	..	13
Febris, typhoid	2	..	..	2
Dysenteria	3	2	..	5
Diarrhœa	..	9	..	9
Ophthalmia	1	..	..	1
Total	6	24	..	30

"From the 1st to the 14th of this month, light airs, with variable north-north-west, "north-west, and north-easterly breezes prevailed; and from this date to the 19th the "weather was characterised by heavy squalls from the northward, with passing rain and "lightning.

"The atmospheric temperature, taken in the companion, averaged, at noon, 78·44°; "at midnight, 76·58°.

"The temperature, saline contents, and boiling point of the water by the ship's side, "continued the same as in last month's Return.

March. "*March*, 1868.—Seventeen cases of dysentery were admitted during the month, of "which eight are recorded by me as sporadic, it not having appeared that they ever "suffered from this disease previously.

"The others were contracted in the country, but had previously suffered from this "affection in India. It was supposed to have been produced by the combined influence "of insufficient rations, impure water, sudden transition from heat during day to cold "during night, and exposure to wet, &c. Most of the cases occurred on the journey from "Kumayli to Antalo.

"The great bulk of the patients treated during this month was composed of weakly "men weeded from the various regiments destined to form the Advanced Force; and "the entire number, 187, were sent in the 'Golden Fleece' to Suez on the 19th March, "and proceeded to England in the 'Simoom.'

Diseases.	Primary Attack contracted in Abyssinia.	Had previously suffered in India or elsewhere.	Doubtful Cases.	Total.
Febris, int.	..	..	30	30
Dysenteria	8	9	..	17
Diarrhœa	11	..	..	11
Ophthalmia	..	..	5	5
Total	19	9	35	63

"The average temperature in Annesley Bay, up to the period of our leaving it on the "above date, was, in Surgery main deck, at 8 A.M., 80°; in companion on upper deck, at "noon, 81·23°; at midnight, 79·34°. Calm, light north and north-westerly airs and "breezes characterised this period, with an occasional light wind from the southward "towards evening.

"The temperature of the sea-water by ship's side, up to 19th instant, was 80° Fahr., "its boiling point 213·3° Fahr., and contained 5 ounces per gallon of saline ingredients "as before.

"*April*, 1868.—From the 19th March to the 19th April, the 'Golden Fleece' was April. "absent from Annesley Bay, engaged in the voyage to and from Suez, where she was "sent with invalids, remaining a short time to fill up with coals and water. This voyage "was useful as testing by experience,—

"1st. The applicability of the newly-erected latrines for use at sea.

"2nd. The impossibility of cooking, in a tropical climate, for more than a "limited number of men, with our cooking galley in its present position, "viz., immediately in front of the engine-room and funnel.

"3rd. The advisability of having such coals chosen for hospital ships as will "produce least smoke, or, better still, smoke-consuming furnaces.

"We opened hospital again on the 26th of this month, from which date to its "termination ten patients were received, eight of whom were discharged to duty, while "two—one of chronic dysentery, and one of syphilitic rheumatism—remained as invalids "to be sent to England, *vid* Cape of Good Hope.

Diseases.	Primary Attack contracted in Abyssinia.	Had previously suffered in India or elsewhere.	Doubtful Cases.	Total.
Dysenteria	..	..	2	2
Diarrhœa	1	..	..	1
Total	1	..	2	3

"Light northerly and north-westerly airs and calms prevailed up to the 30th instant. "The atmospheric temperature, taken in Surgery on main deck, averaged, at noon, 85°; "at midnight, 84·5°.

"The temperature of the sea-water by the ship's side was considerably raised,

"registering 85° Fahr., the boiling point being 213·3°, and the saline constituents "5 ounces per gallon as before.

May. "*May*, 1868.—From the 1st to the 31st of this month 78 cases were received, the "prevailing diseases being dysentery (18), principally contracted on the march to "Magdála, and picked up by the returning column from the detachment hospitals.

"The 12th of this month was characterised by the admission, from the Camp Zula, "of the first case of 'insolatio;' and from the 26th to the 28th instant five additional "cases occurred amongst 'convalescents' on board this ship, all proving fatal.

"The increasing frequency of this disease induced me to write an urgent letter to "the authorities, with a recommendation that the 'Golden Fleece' might be sent to sea "for a few days, to cause a better circulation of air through her hospital decks. My "recommendation was acceded to, and we left Annesley Bay on the morning of the "29th, returning on the afternoon of the 31st.

"This had the effect of checking the disease, which did not again appear until the "day before we sailed for England (4th June), when another case occurred, of which, "together with the foregoing, mention will be made in special notes on this disease "appended to this return.

Diseases.	Primary Attack contracted in Abyssinia.	Had previously suffered in India or elsewhere.	Doubtful Cases.	Total.
Febris, int.	..	..	4	4
Dysenteria	..	..	19	19
Diarrhœa	7	..	..	7
Ophthalmia..	..	..	2	2
Total	7	..	25	32

"From the 3rd to the 20th of this month dark gloomy weather prevailed, with occa- "sional heavy squalls from the south-south-west, accompanied by forked lightning, "thunder, and rain. These squalls generally set in soon after 4 o'clock P.M., and some- "times lasted for some hours.

"From the 20th to the morning of the 29th the weather became calm and cloudy, "with an oppressive stagnant state of the atmosphere, and occasional light variable airs "from the northward.

"From the 1st to the 15th the average range of the thermometer, taken in the "Surgery, was, at 8 o'clock A.M., 86·6°; and from the 15th to the end of the month a "marked increase occurred, viz., at 8 o'clock A.M, 88·75°; at noon, 90·5°.

"There was a corresponding increase in the temperature in the water at the ship's "side, which this month rose to 90° Fahr., at which it continued until we left Annesley "Bay for England on the 4th of the following month.

June. "*June*, 1868.—From the 1st of this month to the date of departure from Annesley "Bay, 63 cases were received on board, composed principally of patients transferred "from the hospital ship 'Mauritius.' The aggregate of this number, with that of the "admissions in May, amounted to 141, of which 119 were sent to England *vid* the Cape "of Good Hope, together with 15 of the Royal Navy, and 14 invalid officers (one of "whom disembarked at Aden), a total of 148 invalids.

"Of the casualties of the voyage, notice will be taken in a separate Return.

"From the foregoing statement, the following statistical facts, as shown in appended

" Return, may be deduced, viz.: that of a total of 52 cases of dysentery treated on board " this hospital ship during the Abyssinian Expedition, but 13 could be considered as " primary attacks; and of 57 cases of intermittent fever treated during the same period, " but one was a primary attack. Of nine cases of ophthalmia, but one could be con- " sidered as a strictly zymotic disease. Of the 49 cases of diarrhœa noted, almost all " (38) were primary cases contracted in the country, from the impure water and vicissi- " tudes of climate, &c.

" Both cases of typhoid fever were contracted in this hospital, and the most fatal " disease we had to deal with was "insolatio." All the cases that occurred in Annesley " Bay proved fatal.

" The average range of the thermometer was, at 8 o'clock A.M., 88·75°; at noon, 90·5°.

" Its appearance amongst the men was no doubt mainly attributable to the stagnant " condition of the atmosphere at the time.

" In conclusion, I shall only observe that from the date of opening hospital in " Annesley Bay on the 17th December, 1867, to that of our leaving it again for England " on the 5th June, 1868, a period of over six months, 486 soldiers, 37 officers, 60 Royal " Navy, and 27 Transport Service, a total of 610 patients, were treated on board the " hospital ship 'Golden Fleece.'"

From the experience Dr. Roch had in medical charge of the 'Golden Fleece,' he submitted the following outline of what he considered a Model Hospital Ship:—

" The class of vessel best adapted for this purpose would appear to be an iron ship, Model Hospital Ship.
" not less than 10 feet between decks (*i.e.* between the upper and main deck), lined with
" wood on the outside down to the watermark, with a non-conductor of felt between the
" wood and iron, pierced along the sides with large square ports, 3 feet by 3 feet. Two Ports.
" large central ports on each side, flush with the deck, and sufficiently large (8 feet by
" 8 feet) to admit readily a wounded man on a hospital stretcher or dhooly, when raised
" out of a sick boat by a tackle. These ports should be furnished with gangways and
" ladders for the accommodation of the sick.

" The lesser ports should be furnished with slides—one for glass, the other for
" Venetian blinds—and should have side ventilators to catch the breeze from the bow.

" An iron ship is chosen as less likely to absorb and retain poisonous miasma or Iron Ship recommended.
" contagion; and lining the outside with wood, &c., will overcome the objection of the
" iron being the greater conductor of heat and cold.

" *Upper Deck.*—The upper deck should be furnished with nettings instead of bulwarks Upper Deck.
" arising flush from the deck; or should bulwarks be deemed necessary for safety at sea,
" they should be so constructed as to be capable of being removed when at anchor, and
" nettings substituted in their stead, otherwise a great source of ventilation will be lost,
" and short ventilators rendered comparatively useless.

" The saloon and latrines of the officers constituting the staff of the hospital, Saloon.
" together with those of the officers of the ship, should be on this deck if possible; or in
" the event of space not admitting this arrangement, I would recommend a portion of
" the bow or main deck to be fitted for this purpose, where I would also have any cabins
" for sick officers placed, viz., next in front of the sick soldiers, the object of this distri-
" bution being to obviate the danger of contagious miasma passing from the sick to the
" healthy staff of the hospital.

" Of the houses on this deck, the cooking galley for the sick should be the most Cooking Galley.
" forward, as from the number of diets to be cooked, and consequent fires necessary, the

"temperature rises to an extreme degree. (On board the 'Golden Fleece,' during the "Abyssinian Expedition, in cooking galley it varied from 130° to 150°.)

"The cooking galley for the saloon, bakehouses for the sick and saloon, cooking "galley for the sailors of ship, and wash-house for sick, should follow in rotation back- "wards towards the funnel,—the object being to place those deck-houses or gallies where "the greatest heat is generated in the relatively coolest position.

Wash-hand Basin. "Wash-hand basins and waterclosets for convalescents and Army Hospital Corps "should be placed one on each side of this deck. The latrines to overhang the water "with a direct drop. Those on the leeward side to be used only.

Latrines. "The advantages of overhanging latrines, contrasted with those constructed inboard, "both for use at sea and in harbour, has been sufficiently proved by the experiments in "the 'Golden Fleece.'

Main Deck. "*Main Deck.*—For the hospital, one main deck running fore and aft, without bulk- "heads, ventilated and lighted from above by skylights, one on each side, extending the "entire length of the deck, large enough to admit windsails when necessary, and fitted "with sliding windows at the sides, same as for the ports; the top to be solid, capable of "being raised to catch the breeze, or lowered in bad weather, and made available for "seats when the patients can come on deck.

Quarter Galleries. "The "quarter galleries" to be used as latrines, so fitted as to overhang the water "directly, and at such distance as to dispense with the necessity of pipes. Other latrines "might be placed at the bows, of the ordinary description, supplied with water from tanks "on deck. Any further waterclosets or urinals that might be deemed necessary should be "placed as nearly as possible opposite the engines on each side, and an auxiliary engine "should be fitted to keep them constantly flushed with water, and which might also be "made available for turning a pair of 'thermantidoles,' one at each side of this deck, or "for keeping 'punkas' in motion, should they be considered necessary. The baths for "the patients should also be placed in this position, and should contain a constant supply, "from the engine-room, of cold and hot water. This last is essential, as the coppers in "cooking galley being almost always in use for the preparation of diets, there is often a "difficulty in obtaining this agent when required.

Lower, Fore, and After Decks. "*Lower, Fore, and After Decks.*—A portion of this deck (the lower after-part for "instance) should be allotted as a hospital for the sailors of the ship, another part should "be fitted for the Army Hospital Corps, and a portion for the sleeping berths of the petty "officers and sailors of the ship.

Orlop Deck. "*Orlop Deck.*—Portions of this space should be allotted for the various hospital and "Purveyor's stores, ship's stores, &c.

"From this deck it is in my opinion highly essential that tube ventilators should be "fitted as outlets for the foul air and gases which must arise from the stores, and for the "escape of the heated air arising from the recently-filled water-tanks.

Water Tanks. "*The Water-Tanks* should be close to the bottom of the ship, and fresh-water con- "densers fitted of sufficient power to supply water at as low a temperature as possible.

"The tanks to be cased in wood, and fitted with air-tight manhole doors to prevent the "escape of moisture, and air-pipes to open outside the ship, to let heated air escape as "tanks become filled.

Bilge. "*Bilge.*—There should be a free communication between all parts of the ship's bilge, "and it should be so arranged that it could be flushed from either bow or stem, and "pumped out as dry as possible. There should also be fitted along the ship's side a "concave sheef or segment of a funnel, to prevent the bilge running up ship's side as she "rolls, by throwing it back upon itself. This should extend the entire length of the bilge- "well, and as far further as necessary.

"*Awnings.*—Great care should be devoted to the proper adjustment of awnings for hospital service. They should be double, having separate ridge vosses; and when set they should be separated not less than 3 feet from the bulwark or outside edge, and not less than 4 feet at the centre, in order to permit a free current of air between them, either from the side, should the ship be swung across the wind, or fore and aft, should the vessel be lying head to wind. Awnings.

"As each upper and lower awning, from their great size, becomes unwieldy and difficult to take in, in the event of a sudden violent squall, not an uncommon occurrence in the tropics, I would suggest that each should be composed of separate conveniently-sized portions, fastened to sliding rings on their respective ridge-ropes, and so arranged at the centre with blocks, &c., as to be capable of being drawn together or 'brailed in' when occasion required.

"All windsails and outlet shafts should open above the upper awning when practicable; and one of the Dantan fire-engines should be so fitted with a hose and rose as to be capable of damping occasionally the awnings, by which the temperature beneath would be reduced, and the dry parching nature of the atmosphere, often experienced in the tropics, to some extent mitigated. Windsails.

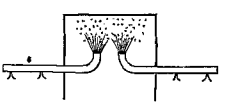
"*Ventilators.*—In addition to the means already noted in speaking of the hospital deck, the following may be adopted with advantage as additional means of ventilation:— Ventilators.

"1. Dr. Edmonds' ingenious and now generally adopted system, comprising the advantages of the heated coil and blast; but in constructing or surveying this apparatus, care should be taken that the steam supply-pipe leading from the boiler should be of sufficient area to supply with full effect its branches, viz., the blast and heated coil, it having been found, in the case of the 'Golden Fleece,' that a greater volume of air was eliminated when using the blast alone than when its strength was divided between the blast and coil, in consequence of the main steam-pipe not having been sufficiently large. Dr. Edmonds' System.

"2. A modification of Dr. Edmonds' system might in some cases be adopted with advantage, dispensing with the heated coil by conveying a metal tube or shaft from either end of the hospital deck (main deck) along the ceiling to the funnel, one from the stem, the other from the bow, having openings at regulated distances fitted with two slides, one of perforated zinc, the other a plain piece simply to close the aperture altogether: thus all may be used open simply as free outlets, or the current might be modified by the use of the perforated zinc slides, or some might be closed altogether occasionally, which would have the effect of concentrating the draught at the remaining open ones, should such be deemed advisable. Modification suggested.

"As all hospital ships will require the condensing engine to be constantly at work, both for the supply of water and the other purposes already noted, there will always be a sufficient blast in the funnel to keep the above simple arrangement (a sketch of which is appended) in operation.

"3. Tube ventilators, except as outlets, have in my experience not been so effective as windsails, perhaps owing to the greater height to which the latter can be raised, catching the upper current of air, as well as to the greater spread of their wings. The disadvantages arising from tubes passing in and through the hospital decks are a considerable loss of cubic and superficial space, leakage consequent on the decks being cut for their admission, &c.



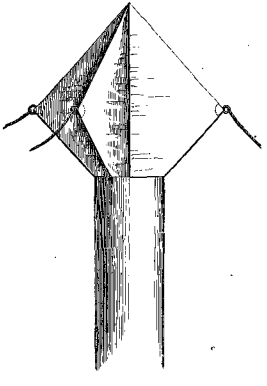
Tube Ventilators.

"Great inconvenience was felt from this cause in the 'Golden Fleece,' the water "penetrating from the upper deck in spite of all attempted remedies, producing in bad "weather a most unsanitary condition of the hospital, and destroying the bedding.

"The advantages of tube ventilators become therefore problematical, and the only "portion of the ship in which their use is without doubt beneficial, is in the orlop deck, as "indicated in my remarks under the head of 'Orlop Deck.' Tube outlet shafts should, "if possible, open either above or between the double awnings.

Metal Deck Vents.

"The short metal deck ventilators (Government pattern), as used in sick officers' "cabins, 'Golden Fleece,' answer pretty well with nettings instead of solid bulwarks; "but they would be much improved by the addition of a lip round the top, curving out- "wards and downwards (as recommended for the bilge well) to prevent the water splashing "over while washing decks, and by increasing the length of the projecting cowl to prevent "rain, &c., from entering.



"A nearer approach to a mushroom shape "would in my opinion be an improvement. "Windsails might with advantage be made to "fit inlet tubular shafts, and to avoid the incon- "venience of constantly resetting them. Self- "adjusting windsails with four wings (a sketch "of which is annexed) might be used for this "purpose.

Whitewash and Paint.

"*Whitewash* v. *Paint*.—The advantages of "whitewash over paint, as a non-conductor of "heat, are now pretty generally acknowledged; "and experiments have shown a decrease in "temperature, in favour of this agent in tropical "climates, of 3° below white paint, of 7° below "buff, and 15° below black.

"All hospital ships for tropical service "should therefore be whitewashed on the out- "side; and I strongly advocate its adoption for "the inside hospital decks, as more cheerful, "cheaper, more readily renewed, and a more "sanitary agent than paint.

"It was adopted with the happiest results "in the 'Golden Fleece,' both inside and out- "side, during the Abyssinian Expedition, and "greatly improved the light in, and cheerful "aspect of, both the officers' saloon and hospital decks.

"For internal use, it was simply prepared by mixing the lime with thickish rice- "water, no size or other agent being used.

"Paint must be washed clean and free from grease before this wash is applied "over it.

Matting round Ship.

"*Matting round Ship*.—Bamboo matting was tried in the 'Golden Fleece,' projected "on bamboos from the ship's side, as a sort of shade or verandah, but the result was not "satisfactory. It was constantly getting smashed by sailing-boats coming alongside, and "in high winds it was liable to be blown away altogether. A better mode of application, "particularly in the case of wooden ships painted black, would be to have it tacked along "the sides, leaving or cutting spaces for the ports, when it might be occasionally wetted "with the hose, and thus act beneficially in cooling the ships in very hot weather."

A REGISTER of the Thermometer was kept in the Surgery on the Main Hospital Deck of the "Golden Fleece," and the following was the result.

Thermometrical Observations on "Golden Fleece" main-deck at 8 a.m.

Station.	Dates.	Therm. at 8 A.M.	Station.	Dates.	Therm. at 8 A.M.	Station.	Dates.	Therm. at 8 A.M.	Station.	Dates.	Therm. at 8 A.M.
		°			°			°			
Annesley Bay. Convoying invalids to Suez.	Mar. 1	76	Returning from Suez to Annesley Bay. Annesley Bay.	April 1	64	Annesley Bay. On a cruise at sea.	May 1	86	Annesley Bay.	June 1	89
	2	78		2	63		2	87		2	89
	3	80		3	60		3	85		3	91
	4	79		4	60		4	87		4	91
	5	81		5	56		5	86		5	91
	6	82		6	55		6	85			
	7	82		7	59		7	86			
	8	78		8	69		8	87			
	9	79		9	68		9	84			
	10	79		10	67		10	88			
	11	76		11	63		11	89			
	12	77		12	63		12	88			
	13	80		13	70		13	88			
	14	81		14	75		14	87			
	15	83		15	79		15	87			
	16	83		16	82		16	90			
	17	81		17	84		17	89			
	18	84		18	82		18	88			
	19	83		19	85		19	89			
	20	81		20	86		20	89			
	21	82		21	88		21	88			
	22	81		22	89		22	89			
	23	76		23	86		23	89			
	24	75		24	83		24	88			
	25	75		25	83		25	88			
	26	68		26	82		26	89			
	27	67		27	84		27	89			
	28	66		28	84		28	89			
	29	65		29	85		29	89			
	30	63		30	86		30	89			
	31	67					31	89			
		77			72·2			87·7			90·2

The following was the Register of the Thermometer on the Companion Gangway of the same ship.

Observations on the Companion Gangway, "Golden Fleece," at noon and midnight.

1867. Station.	Date.	Hour. 12 A.M.	Hour. 12 P.M.
		°	°
Annesley Bay.	Dec. 1	0	
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	10		
	11		
	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		
	20		
	21		
	22		
	23	65	81
	24	84	81
	25	83	83
	26	80	82
	27	84	81
	28	84·5	81
	29	84	82
	30	84	81
	31	81	81
		84·2	81·6

1868. Station.	Date.	Hour. 12 A.M.	Hour. 12 P.M.
		°	°
Annesley Bay.	Jan. 1	82	80
	2	85	83
	3	82	78
	4	81	79
	5	81·5	79
	6	81	80
	7	81	80
	8	80	80
	9	82	80
	10	83·5	82
	11	84	80
	12	81·5	79·5
	13	82	80
	14	83	79
	15	83	79
	16	80	79
	17	81·5	79·5
	18	82	79
	19	80	79
	20	81	80
	21	82·5	80·5
	22	81	79
	23	81·5	79·5
	24	83·5	79
	25	83	80
	26	83	81
	27	82·5	80
	28	82	82
	29	85	81
	30	83	81·5
	31	81·5	79
		82	79·5

1868. Station.	Date.	Hour. 12 A.M.	Hour. 12 P.M.
		°	°
Annesley Bay.	Feb. 1	80	78·5
	2	79·5	80
	3	78	75
	4	76	76·5
	5	78	77
	6	81	79
	7	82	79
	8	81	77
	9	79	76
	10	79	76
	11	82	80
	12	83	80
	13	80	79
	14	77·5	76
	15	77	76
	16	79	78
	17	79	80
	18	82	79
	19	81·5	75
	20	77	74·5
	21	76	75
	22	75	75
	23	77	78
	24	77	76
	25	77	75·5
	26	76	74·5
	27	75·5	73·5
	28	74	72
	29	74·5	73
		78·4	78·4

1868. Station.	Date.	Hour. 12 A.M.	Hour. 12 P.M.
		°	°
Annesley Bay.	Mar. 1	76	73·5
	2	82·5	80
	3	84	80
	4	86	80
	5	84	81
	6	84·5	80
	7	84	80
	8	80	78
	9	82	78
	10	77	76
	11	76	74
	12	79	74
	13	84	81
	14	82·5	82
	15	85	86
	16	83	87
	17	84	85
	18	86	82
	19	81·5	83
	20	83	78·5
	21	84	81
	22	81	77
	23	77·5	75
	24	79	76
	25	75·5	74
	26	76	69
	27	72	66
	28	67	63
	29	70	64
	30	69	71
	31	69·5	67
		79	76·2

1868. Station.	Date.	Hour. 12 A.M.	Hour. 12 P.M.
		°	°
Annesley Bay.	April 1	71	69
	2	65	69
	3	64	63
	4	65	63
	5	64	57
	6	69	63
From Beer to Annesley Bay.	7	64	64
	8	73	70
	9	68	72
	10	74	63
	11	74	62
	12	68	70
	13	76	72
	14	78	70
	15	82	82
	16	85	83
	17	84	82
	18	85	84
	19	89	85
	20	89·5	87
	21	90	87
	22	89	86
	23	87·5	85
	24	86	85
	25	86	84
	26	84	84
	27	87	85
	28	87	87
	29	89·5	85
	30	80	85
		78·4	74·9

1868. Station.	Date.	Hour. 12 A.M.	Hour. 12 P.M.
		°	°
Annesley Bay.	May 1	99	86
	2	99	85
	3	88	83
	4	88	84
	5	86·5	83
	6	86	84
	7	91	86
	8	88	90
	9	89	89
	10	100	92
	11	92	89
	12	90	87
	13	92·5	87
	14	92	88
	15	92	88
	16	92	89
	17	92	89
	18	91·5	90
	19	91·5	88
	20	90	88
	21	92	89
	22	94	90
	23	94	89
	24	93	89
	25	91	90
	26	90	89
	27	87	88
	28	91	89
	29	94	92
	30	93	89
	31	91	88
		91	87·9

1868. Station.	Date.	Hour. 12 A.M.	Hour. 12 P.M.
		°	°
Annesley Bay.	June 1	90	87
	2	89	88
	3	88	88
	4	85	88
	5	93	88
	6		
	7		
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	11		
	12		
	13		
	14		
	15		
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	28		
	29		
	30		
		89·4	87

Remarks.

SECTION II.—INDIAN SERVICE.

Hospital Ships for Native Troops.

As three hospital ships were sent from England for the use of European troops, the Government of Bombay decided upon equipping a hospital ship at Bombay for the use of native sick. This vessel was the "Star of India," of 1,045 tons, with a height of seven feet between decks, with a superficial space of 4,560 feet available between decks for patients. Another ship was afterwards also allotted for this purpose in Annesley Bay.

Medical comforts and medical stores were sent in accordance with Indian regulations, and the rank of the officers of the British and Indian Medical Departments regulated according to the following extract from the General Orders of the Government of India, dated June 6th, 1867:—

Rank of British and Indian Medical Officers.

"When troops are assembled for field service all medical arrangements, for the "formation of depôt hospitals, the supply of medical stores, the transport of the sick, &c., "will rest with the medical officer of either Service, who may be specially appointed "Principal Medical Officer to the Force."

Medical arrangements on the arrival of Sir R. Napier at Zula.

By the time Sir Robert Napier arrived, a general hospital had been established at Zula for the treatment of the sick from among all classes of camp followers. A Surgeon was in medical charge of this hospital, with two assistant surgeons, and a suitable establishment of hospital subordinates serving under his orders. Arrangements had been made to send, as soon as carriage and warm clothing were procurable, a Field Hospital Establishment, a Staff Hospital and Medical Store Depôt, to Senafe, for the purpose of establishing another General Hospital for all camp followers at that post.

Sanitary Arrangements.

The sanitary arrangements at Zula had been satisfactorily carried out by Surgeon Lumsdaine.

There was a medical officer at each of the five posts between Zula and Senafe, three of whom belonged to the British Medical Service. Their duties were to attend to the sanitary state of their respective posts, and to give professional aid to any troops or followers who might be unable to continue their march.

The sanitary condition of the road was further provided for by the appointment of two Medical Officers of the Indian service to the duty of frequently patrolling the line of road between Zula and Senafe, to see that the bodies of all dead animals were removed and buried, or otherwise disposed of. One officer superintended the work between Zula and Upper Suru, and the other from that post to Senafe. They were each provided with tools, and as good a working establishment as was procurable.

At Senafe the sanitary arrangements were, in the absence of a special sanitary officer, performed by the Senior Medical Officer of the station.

Dr. Pelly's report.

The Medical Establishment of the Indian Service has been given at page 301. The medical arrangements generally have been shown in the preceding chapters, describing the march of the Force, and the following Report* from Deputy Inspector-General Pelly gives all the remaining information on record regarding the working of the Department in Abyssinia:—

* Dated 27th August, 1868.

Number treated.

"The total number treated, as per my Returns, and including only those between "Annesley Bay and Antalo, was 14,137. Deaths for the same portion of the Force, 284

"More than half the admissions were for five diseases, as follows:—

Diseases.

Fever	3,608
Dysentery	1,410
Rheumatism	1,271
Diarrhœa	881
Scurvy	584
	7,753
All other diseases	6,384
As above	7,753
Total	14,137

"The deaths were as follows:—

Fever	70
Dysentery	32
Rheumatism	3
Scurvy	3
Diarrhœa	8
All other diseases	168
	284

"The above admissions include of course those sent away as invalids; but the deaths "only include those who died in the country. As yet I have been unable to ascertain how "many died on the voyage to Bombay, or afterwards at the hospital establishments there "for their reception; but the number must be very considerable, as during my stay there "I heard of their dying often at the rate of six or eight per diem. Even these, when "ascertained, will fail to give the total of deaths caused by the Expedition, as many "invalids went to Egypt, Aden, &c., who will never be heard of again, and many of "them preferred endeavouring to reach their homes on arrival in India to going to "hospital. There were a large number of cases of ulcer treated, but many of these were "included in the returns under the head of scurvy. This disease (scurvy), though seldom "making the appearance as a purely primary disease, was by degrees extensively spread "throughout the whole Force, notwithstanding that all available means were resorted to "with a view of keeping it in check, so much so that serious complications of otherwise "tractable diseases arose, and in many cases death, though not recorded under this head, "was certainly hastened, if not caused by it.

Causes of disease.

"The chief causes of disease were deficiency of suitable clothing and shelter, whereby "the men, especially the followers, were exposed to cold and damp, and even to heavy "rain as well as dew; scarcity of water, and that which was supplied being sometimes of "unwholesome quality, as at Zula, from the holes in the Huddas River; food, which "though generally abundant and good of its kind, was not of the nature and variety to "which the men had been accustomed in the Bazaars of India; excessive fatigue and "exposure to intensely hot solar rays; malaria; and overcrowding. To these may be added "as predisposing to disease, debility, and a natural unfitness for service on a campaign; "and, lastly, as tending to aggravate diseases which at first were of small importance, "the intense clouds of dust which almost daily covered the ground between Annesley "Bay and the mountains.

"The diseases produced by the above courses presented no peculiarities which are "not well known to the medical profession.

"The Sanitary Department was very satisfactory, both at Zula and Kumayli, where "thousands of animals were always congregated, and where the daily mortality was very "large; the arrangements were so ably carried out that it was very rare for anything "offensive to the senses to be left for any length of time where it could be an annoyance "or source of disease; in the Passes, too, the arrangements were very well kept up under "the vigilant supervision of Assissant-Surgeon Lalor, Sanitary Officer to the Force. "This is the more creditable to the Medical Officers immediately concerned, as it could "not have been effected without great and constant extra labour and exposure to the "sun. Each Medical Officer in charge of a station being expected to ride six miles on "either side of his post almost daily. Sanitary department.

"As regards the general plan of sanitation for the Force, the details were drawn out "by Surgeon Lumsdaine, who was the officer first nominated 'Sanitary Officer, I.M.D.'

"The hospital ship 'Star of India,' though of undoubted benefit in some cases, was "not found to be so generally useful as had been anticipated. This, too, not being in any "way attributable to its construction or establishment, but simply to the strong prejudice "entertained by the Hindoo portion of the Force to cooking on board, owing also to the "difficulties raised regarding the supply of food to Europeans, whether officers or others, "numbering, as shown above, 700 men, none could be admitted on board. All sick "European officers and followers were therefore sent to the hospital ships provided for the "reception of the British troops. The use of the 'Star of India' was thus restricted to "the reception of Mahomedans; and to them, under the skill and good arrangement of "Surgeon Partridge, the vessel proved of very considerable benefit. Hospital ship.

"His Excellency Sir R. Napier having issued an Order that all the sick who were not "likely to become fit for duty in fifteen days should be sent out of the country, enabled "the Medical Department to remove all chronic cases, and thus there was never at any "time any approach to overcrowding in the hospital ship.

"The above are extracts from a Report I am sending to the Inspector-General, Indian "Medical Department. Should Lord Napier wish for the Report *in extenso* I shall be "happy to furnish a copy. I think, however, unless a detailed account of how the several "causes acted in producing disease is wished for, there is very little of importance in my "Report besides the above.

"The meteorological registers were kept by Drs. Cook and Nicolson. The latter "died in the Red Sea, and I fear his registers will not be forthcoming. I saw the ther- "mometer in the sun one day at 184°. It was often 104° in my tent before breakfast, "and rose to 117° during the day. Meteorological register.

"I have ascertained the number of Native troops and followers invalided from "Abyssinia during the late campaign. It is as follows:— Numbers of Native troops invalided.

"Native troops, 570. Followers, 5,486. Total, 6,056.

"Of the followers, after leaving Zula, there died as the result of the campaign,—

"In Bombay	171	Deaths.
„ Aden	5	
„ Kurrachee and Kotree	53	
	229	
Before reported	283	
Total	512	

"The above numbers, however, only give the deaths recorded in our hospitals; but "it is far from improbable that many more occurred, both from among the 1,220 invalids "who went to Suez, as also from among those who returned to Bombay, but preferred "going direct to their own homes up country to remaining in the hospital established for "their accommodation at this Presidency."

CHAPTER XXXII.

VETERINARY DEPARTMENT.

THE rank and names of the Veterinary Surgeons attached to the Force have already been shown.* The maximum number of animals under their charge was 51,000; the average mileage over which each Veterinary Surgeon had to do duty was 40 miles; and the number of animals in each Veterinary Surgeon's charge was about 5,000.† Number of animals. Distribution of Veterinary charge.

The duties performed by the Veterinary Surgeons in Abyssinia were extraordinary, for not only had they to conduct their ordinary duties, but they had to attend to several kinds of animals, as well as to render professional aid to the sick animals, the property of officers and gentlemen attached to the Force. Duties of Veterinary Surgeons.

The epizootic which raged so virulently at the commencement of the campaign, demanded the time and attention of every officer of the Department. The disastrous effects of want of food and water, together with excessive work, upon all transport and other animals, likewise entailed heavy additional work, which was at all times cheerfully undertaken.

The result of our veterinary experience, regarding the epizootic which prevailed during certain months of the year on the eastern coast of Africa, was considered satisfactory, inasmuch as it was proved that, with care, Cavalry and Artillery could be landed on the highlands of Abyssinia with only ordinary loss. Veterinary experience satisfactory.

The casualties resulting from ordinary causes were few; those resulting from extraordinary causes were, on the other hand, numerous. The "extraordinary causes" were,—want of food and water, excessive and continued work, work at great altitudes, the epizootic disease. Casualties.

Principal Veterinary Surgeon J. H. B. Hallen on the 4th May, 1868, recorded the following opinion as to the amount and nature of the work performed by the horses and mules belonging to the Force, the grain, grass, and water they had had, and also the effects both the work and forage had had upon the animals,— Reports by Principal Veterinary Surgeon Hallen.

"1st. That the horses and mules (some of them whilst still suffering from the effects "of the epizootic which prevails in the lowlands along the eastern coast of Africa) have "had to perform extraordinary work almost ever since they were landed in Abyssinia, Work.

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* *See* Chapter VI, page 185.

† Principal Veterinary Surgeon Hallen's Report, dated 7th June, 1868.

"nearly five months since, by making long marches on account of the scarcity of water "in many parts of the country through which the Army has passed, by ascending and "descending mountains from 1,000 to 4,000 feet in height, very often over tracks difficult "even for man to travel over without falling, and so impassable for some animals that "they have fallen over precipices and been killed, whilst others have dropped down dead "from over exertion and sheer exhaustion, when endeavouring to continue their arduous "journey at great altitudes.

Forage. "2nd. That grain and grass have been given to the animals to the fullest amount "procurable. Notwithstanding that fabulous sums were offered and paid for both, they "have been with such difficulty obtained that generally the horses and mules have been "on half rations of grain of indifferent quality and indigestible kind, and occasionally on "much less than half rations. The grass has not been obtainable in sufficient quantity, "and such as has been received has often been of bad quality, the animals having had "frequently to graze off the scanty herbage of the steep hills or parched plains.

Water. "3rd. That the water found was on some occasions little in amount and of very bad, "indeed almost poisonous, quality; and when the Force was before Magdála, the animals "were more than seventy hours without water, and during that time almost continuously "at work.

"4th. The effect of this very hard work and insufficiency of food and water is that "many horses and mules have died, and others became so diseased and crippled that they "had to be destroyed, from sheer inability to walk. Of the animals now remaining, nearly "all are suffering from the causes above detailed; and some will, I fear, succumb, whilst "many will, I believe, be permanently debilitated or incapacitated for further service."

The following Report is from the same officer on the subject of the epizootic disease commonly called African glanders, of which so many horses and transport animals died at the opening of the campaign:—

Report on the epizootic disease. "The Danakil equine typhus fever is a disease of the epizootic class, at all seasons "prevailing on the eastern coast of Africa in the Danakil country, and from the coast "generally to the highlands. It assumes its most malignant form after the rains that "periodically fall, generally in the months of January, February, June, and July.

"The equine race is most subject to this fever, but it is said that cattle and camels "also are attacked with a disease similar to, if not identical with it.

Description. "The fever is of a typhus type, associated with a highly depressed state of the nervous "system, at times of very malignant form and rapid course; at other times of a com- "paratively mild and protracted course. The circulatory system or lungs are the parts "generally involved during the progress of the disease, and in some cases the stomach is "found more or less affected. It is contagious, but not so contagious as might be "expected amongst the horses and mules of this Army, as they are of course kept in the "open; but probably the disease would be highly infectious amongst horses and mules "in a confined atmosphere. The period of incubation is from a few hours to twelve or "fourteen days.

Causes. "The causes may be classified under the heads, exciting and predisposing.

"The exciting cause doubtless rests with some particular state of the atmosphere in "the localities where the disease prevails. It does not seem to be dependent on impure "water or bad forage, as animals solely fed on condensed water and the best imported "forage have become affected with the malady, and when contagion could not have been "the cause of the disease.

"The predisposing causes may be considered over-exertion, insufficient diet, bad "forage, and impure water.

"The symptoms by which the disease may be recognized may be of intense or com- Symptoms. "paratively mild form, according to the intensity of the attack. When the disease "assumes a malignant form, great depression of the vital powers rapidly occurs. The "patient may be found trembling, showing more or less symptoms of stupor; the eyes "half closed; head pendant; respiration accelerated; the mouth, eyes, throat, and glands "in the region of the throat and jaws swelled; mucous membranes highly congested, and "of a dark hue; petechial spots on gums, and the mucous membrane of the gums of a very "dark colour, with more or less yellowish tint; the tongue is also enlarged and coated; "mouth dry, and breath offensive; sometimes the patient ; generally complete "loss of appetite; pulse very feeble and quick, frequently hardly perceptible; the circula- "tion of the blood seems to be all but stopped; at the submaxillary artery the current is "in severe cases, not to be felt; effusion of serum and bloody serum in areolar tissue of "the swelled parts; cough, and generally cough of a marked kind, when present, the "patient does not lie down, or only lies a short time; sometimes no cough, and in such "cases the pulse will be found not only very feeble, but irregular and intermitted, significant "of cardiac disorder. Great difficulty in swallowing, and in severe cases attendant with "symptoms of choking; and when this is the case, signs of the lungs having become "involved are more speedily evinced, even to the threatening of asphyxia; nasal dis- "charge thick, and sometimes bloody, in the latter stages frothy; bowels occasionally "constipated, and feeces coated with bloody mucus; urine scanty, and of a high colour; "fever continued. As the disease advances the above symptoms become more urgent, "and soon evince whether the throat, windpipe, bronchiæ, and lungs are, or the heart, "is chiefly affected. In some few cases, the symptoms are those associated with "disordered stomach. These symptoms continue from one hour to several days, "according to the intensity of attack. Relapse occasionally occurs from ten days to "three weeks after the first recovery. Cases of relapse seldom recover.

"The treatment consists in the administration of diffusable stimulants, such as spirits Treatment. "of nitrous ether, carbonate of ammonia, or, when these are not to be obtained, brandy or "rum in frequent doses; also of camphor and nitre twice a-day. Mustard embrocations "or stimulants of cantharides should be applied to the sides when pneumonic symptoms "predominate, and a stimulant over the left side when cardiac symptoms prevail. When "febrile symptoms abate, quinine in one or two-drachm doses, with stimulants of ether or "brandy, may be given morning and evening. Enemata of warm water, if the bowels be "constipated, warm clothing, with bandages at night whenever the climate is cold at "night. The diet consists of gruel, green grass, and boiled grain; and a small quantity "of common salt should be given in all food and drink.

"The patient should be kept as quiet as possible, well sheltered from the sun by day, "and from the cold by night. Exercise should be forbidden. In cases where exercise "had been unwisely given, the patient has suddenly fallen down and died. The treatment "above recommended I have found successful in most cases I have had to treat; but I "must note that the cases I have had under treatment have been in the highlands, where "the disease generally assumes a comparatively mild form, and cases that have occurred "within twelve or fourteen days after the arrival of the horses from the lowlands and "passes up to the highlands, the districts in which the disease itself, or the seeds of the "disease, are contracted, and where it occurs in a more malignant form.

"The *post-mortem* appearances will of course depend on what particular organs are "affected during life. In cases where cardiac symptoms have predominated, the peri-

" cardium will be found so distended with serum of a yellow or bloody colour, that the " serum will spurt out some feet on the sac being punctured. The heart itself is found " very soft in texture and dark in colour; and with very slight pressure the finger is easily " pushed through its structure. The pericardium covering the heart is covered more of " less with petechia, and these are found to be more abundant on the endocardium " especially at the roots of the bicuspid and tricuspid valves and elevated portions of both " ventricles; and between the valves and walls of the heart more or less yellow fibrinous " clots are collected. The blood in the heart and circulatory system generally is semi- " coagulated, and more or less resembling treacle.

" When the disease has chiefly affected the lungs, these organs are found more or less " hepatized. In cases that have been of very rapid course, the hepatization consists of the " escape of blood into the substance of the lungs; in those that have been of comparatively " protracted course, the hepatization is of a more usual kind, and clots of yellow fibrinous " deposit may be observed throughout the structure of the lungs, leading to the appearance " somewhat like grey hepatization; but the deposits are soft and yielding, not hard and " compact, as in true grey hepatization. The trachea, bronchiæ, and air-cells are full of " mucous effusion; and from the admixture of air seem choked with frothy mucus. The " mucous membrane throughout the aërial passages show patechiæ in abundance, especially " well-marked and very dark in the neighbourhood of the epiglottis and ridges of larynx. " In some cases, the villous coat of the stomach is found of a dark-red or even purple colour; " in one case a portion of it was all but black, an appearance that might be mistaken for " the effects of irritant poisoning; ulceration or perforation not present; the structure " of the walls of the stomach softened. In a few cases, where great difficulty of deglutition had been observed during life, and symptoms of choking occurred, the œsophagus was " found impacted with food, and in two instances some portions of food were found in the " trachea and bronchiæ.

" In conclusion, I would beg to state that, although the losses from the disease were " at first considerable, since the horses have not been kept at Zula or the lowlands, but " sent up by usual marches through the Suru Pass to Senafè, very few horses have been " attacked, and those that have become affected have had the disease in a mild form, only " one or two deaths having occurred. Indeed, I believe that horses may now be imported " to Zula, and sent to Senafè during the dry season, without losing more than one or two " per cent. from the disease.

" Of the 454 horses of the 3rd Regiment of Sind Horse so brought from Zula to " Senafè, not one horse became affected.

CHAPTER XXXIII.

ENGINEER DEPARTMENT.

HIS ROYAL HIGHNESS the Field-Marshal Commanding-in-Chief, on the 26th September, 1867, transmitted to the Secretary of State for War a letter from the Director of the Royal Engineer Establishment, containing a proposal to send out the materials for constructing a railway in Africa for the use of the Force to and from the point of disembarkation. Proposal to send out railway materials.

The proposition of the Director of the Royal Engineer Establishment was to send out a contractor's line of railway, with about 500 navvies, who might be increased afterwards, if necessary, to follow up the Army, laying the rails as fast as they could. He proposed that this railway should be laid following the sinuosities of the ground, with as nearly as possible a regular slope ascending to the table land, that it should have a gauge of 3½ feet, laid on cross sleepers 5 feet long (9″ × 4″ section), and be worked with light open waggons (to be constructed for the special purpose) by mule or horse traction. He further proposed that the materials should be sent forthwith from England for it, and to form an independent wharf sufficient for its own purposes, and that the whole work should be constructed, subject of course to the directions of the Commander-in-Chief, as a distinct operation, each section being brought into use for the Army as completed. Description.

The Director considered that tonnage to the extent of 1,000 tons would suffice for the materials and tools for the construction of five miles of such a railway, and for a large proportion of the staff; and that 2,000*l.* per mile allowed a wide margin to cover all expenses, if 30 miles of the railway only were constructed, exclusive of rolling stock, the cost of which would depend upon the amount of traffic. He considered that if the railway were constructed, one mule would probably do the work of 20 with pack-saddles, and if it only extended across the low lands to the foot of the hills, it was more than probable, the nature of the country being considered, that it would more than pay itself in money in a few months, and that it would undoubtedly be the means of saving many valuable lives. Tonnage required.

As to the time requisite for its construction, he considered that 500 able-bodied navvies could lay two or three miles a week, across a level country, where there was not much earthwork, and it was not improbable that they might, in ascending, continue to advance at a very good rate, so that by increasing the number of workmen, if the Expedition did not come to an end before the commencement of the rainy season in March, the railway might by that time be completed up to the table land or any other point indicated by the General in command. Time required for construction.

This project was not, however, entertained, for it appeared that the Government of Bombay had already had the subject under consideration, and were prepared, if required, to furnish both labour and materials from India; they, however, entertained doubts of the expediency of incurring the heavy expenses requisite until the features of the country were better known.

Railway material ordered in Bombay.

Shortly after, however, the arrangements for the construction of a railway were commenced at Bombay, and the Chief Engineer received orders, on the 8th November, to obtain the following material and rolling stock:—40-pound rails, with spikes and sleepers sufficient for 20 miles, allowing for sidings, &c.; 60 trucks, 5½-gauge; 6 locomotive tank engines, turn-tables, switches, crossings, signals for 80 miles of line; a small fitting and repairing shop, with establishments for fitting, working the line, and labour for laying the permanent way, and for maintenance. Implements and tools for laying permanent way, and for maintenance, were also ordered; and plate-iron girders, of 20 feet span, for bridges.

Labourers sent from Bombay.

One thousand labourers were enlisted, and organized in the following manner:—4 maistrees (head masons and road-makers); 4 subness (clerks), to muster and keep the accounts of the men; 20 muccadums; 200 beldars (pioneers) and miners, and 800 labourers; 1 muccadum, being in charge of a section of 25 men; and 1 subness and 1 maistree, in charge of 5 sections, or 125 men. The beldars and miners were supplied with sootkees (heavy hammers) crowbars and wedges, and with implements necessary for blasting rock. A few plate-layers and persons skilled in such work were also sent.

In order that the line should be laid with the greatest possible despatch, and that the arrangements for working, maintaining and repairing the rolling stock should be as complete and efficient as it was possible to make them, the following establishments and machinery were despatched from Bombay:—

Establishments and machinery despatched from Bombay.

Materials.

Rails, 24 feet	8,800
Sleepers	35,500
Fish-plates	18,700
Bolts and nuts	42,700
Dogspikes	147,000
Points and crossings, complete sets	20

Tools.

Picks	600
Powras (spades)	600
Shovels	400
Crowbars	250
Mining bars for 200 men	1,000
Tamping, ditto	100
Needles	200
Sootkees for 200 men	200

Stores and plant.

Hammers, sledge	150
Hammers	50
Packing picks	50
Screw spanners	30
Jimcrows	5
Wheelbarrows	100
Bellows	8
Anvils	8
Smith's tools	sets 8
Iron guns, pales and slings	„ 20
Buckets	100
Tanks, small	30
Gummels (trowels)	600
Handles, spare	600
Steel for tools	cwt. 1
Grindstone	1
Saws, cross-cut	10
Ropes of sizes	—

Tools—continued.

Chains of sizes	—
Pulley blocks	—
Handsaws	20

Stores and Plant.

Locomotives	4
Trucks	60
„ brake	6
„ water	4
Lorries	8
Couplings	10
„ chains	200
Pumps	1
Force pump	1
Locomotive tank for threshing engines	—
Watering tanks	3
Semaphores, complete	3
Clocks	4
Guards' watches	12
„ bells	12
Screw jacks	10
Station lights	6
Signal flags	sets 50
Guards light	20
Water hose	yards 100
Railway grease	casks 15
Paint brushes	—
Oil, turpentine, &c.	—
Bolts and nuts, iron	cwt. 1
Steel	—
Spare gear of engines and trucks	—
Oil cans	12
Weighing platforms	3

Establishments.

Engineers	1
Platelayers and Inspectors	3
Overseers and Surveyors	2
Macadams	3
Coolies or Platelayers	60

Some coolies and men from the Army Works Corps assisted in the construction of the line.

Traffic Department.

Traffic Manager	1
Locomotive Foreman	1
Stationmasters	3
Station Clerks	3
Storekeeper	1
Storekeeper's Assistants	2
Store Clerks	10
Traffic Manager's Clerks	2
Drivers	4
European Firemen	4
Native "	8
Guards	6
Signalmen	20
Pointsmen	20

Fitters' Shop.

Under the superintendence of the locomotive foreman and engineer of the line.

European Fitters	2
Native Fitters	12
Firemen	12
Blacksmiths	20
Hammermen	40
Rivetters and holders	20
Carpenters	15
Labourers	20

Machinery

Portable Engine, horse power	16	Establishments.
Screw-cutting gap lathe, self-acting	1	
Lathes, small	2	
Shaping machine	1	
Drilling "	1	
Punching and shearing machine	1	
Slotting machine	1	
Screw-cutting machine	1	Machinery.
Taps and dies of sizes	5	
Ratchet braces	5	
Circular saw bend	1	
Saws, circular, sizes	8	
Fan, with pullies	1	
Standards for shafting	40	
Shafting and couplings, yards	90	
Smiths' tools, sets	50	
Piping and nozzles for forges	50	
Vice benches, complete	30	
Belting, feet	400	
Forges, rivetters'	10	
Rivetters' tools, sets	15	
Grindstones	4	

Keys, journals, driving pullies, &c., in proportion to shafting.

Brass furnace, complete, with fire-bricks, clay, crucibles, moulding sand, &c., casting tongs, &c.

Fitters' tools in proportion to the above scale of workmen.

Stores: oil, cotton waste, coal, resin, tow, worsted tallow, red and white lead, copper wire, iron, steel bolts and nuts, rivets, brass, copper, for twelve months' consumption.

Wooden buildings for commissariat stores, hospitals, and quarters for officers permanently stationed at Zula, &c., were sent from Bombay, the number and details of their construction will be found in the annexed report of the Commanding Engineer. Application was also made for building materials from England as shown below; they, however, only arrived at the termination of the campaign, and were transmitted to India. Wooden buildings sent from Bombay and England.

MATERIALS for Ten Blocks of Buildings, each containing Four Officers' Quarters (sent from England).

Yellow fir, framed and fitted	pieces 11,863	
Doors and frames	100	
Windows and frames	100	
Staircase	20	
Ventilators	50	
Boards, flooring	1,550	
" roofing	1,575	
" lining	5,994	
" weather	2,356	
Nails	casks 113	
Tar brushes, handled	dozen 2	
Tar ladles	3	
Tar pots with hooks and S. hooks	3	
Ironmongery	casks 1	
Tar	casks 23	Materials for building sent from England.
Whiting	" 2	
Asphalted felt	cases 18	
Furnaces for heating tar	casks 2	
Tar ladles	3	
Best brace and set (30 bits)	1	
" handsaws ($\frac{1}{2}$ rip)	6	
" jack planes	3	
" smoothing planes	2	
" trying planes	2	
B. Best spike bits	dozen 1	
Best gimlets (box-head)	1	
" awls, handled	" 1	
" hammers	" 1	

Large hammers and handles	..	..	..	3	Best firmer chisels to 1½ inch, handled			sets	1
,, pincers ..	..	..	..	pair 4	,, ,, gauges to 1	,,	,,	,,	1
,, screw drivers	..	..	..	,, 6	,, set stone, stocked ..	..	..	..	1
Best axes and handles	..	..	..	.. 2	,, large mallets	..	..	..	2
,, adzes ,,	..	..	..	.. 2	Glass ..	..	..	..	cases 13
½-inch screw augers, and ditto best	..	..		2	Putty ..	..	..	..	drums 8
Best C. S. saw files	..	..	..	dozen 4					

Reports regarding the progress made in the construction of piers, buildings, railway, roads, telegraph, water supply, and other engineering works were periodically made to the Quartermaster-General's Department, and have been constantly referred to in the preceding pages in the fortnightly reports submitted to the Quartermaster-General, Horse Guards, by Captain Holland, Assistant Quartermaster-General.*

Report by Lieutenant-Colonel Wilkins.

The details of the progress of the railway and the various works will also be found in the following General Report on Engineering Operations, by Lieutenant-Colonel H. St. C. Wilkins, R.E., dated Zula, 30th May, 1868:—

Examination of Massowah.

"The officers of the reconnoitring party, despatched from Bombay on the 16th of "September last year, having, on the 2nd of October, examined the port of Massowah and "the water supply of that port on the plains of Mucculloo, five miles distant from the sea, "formed the opinion that that harbour was too small to accommodate more than half-a-"dozen vessels, and that the water supply was of too limited and precarious a nature to "meet the requirements of the Expedition. The "Euphrates" and the "Coromandel," "containing the exploring force, then steamed southwards into Annesley Bay, and the "water supply at Negoosa, on the promontory of Buri, was examined without satisfactory "results. Crossing the bay, the vessels took up a position off the village of Zula, and the "water supply from the Hadas River promising fairly, and an investigation of the shores "round the bay, combined with information obtained presenting no better prospect, it was "determined to make Zula the base of exploration in the country.

Construction of piers at Zula.

"The beach at Zula shelving very gradually into the sea, it became at once a "matter of great importance to commence the construction of a suitable pier for landing "purposes. Some iron girders and stout rafters had been brought up in the steamers to "assist in forming a pier, but from the nature and formation of the shore it was apparent "that a long pier would have to be constructed from local resources. The plain bounding "the sea was covered with low bushes, but unfortunately no stone was to be had; under "these circumstances, fascines were prepared from the brushwood, and being strongly "staked down formed retaining fences for the filling in.

"Arrangements were at once made for the collection of native craft from Masso-"wah and neighbouring ports, and the conveyance of stone from the opposite side of the "bay, commenced towards the middle of October. Sea-walls were then built outside the "fascines, and by degrees the pier was run out 900 feet into the sea, giving a depth of "5 feet at low water springs. The greater portion of the pier was filled with stone.

"This stone pier was completed sufficiently to be used in landing the advanced "brigade and their horses in November; and by the middle of December the pier was in "general use, having a tramway laid from its head to some distance up the beach, thus "greatly facilitating the landing of Commissariat, Land Transport Train, Ordnance, and "other stores. A tramway was laid down on the beach, running down to low water line "as early as October, and was of much service previous to the pier coming into use.

Works at Zula.

"In this month also a road, 50 feet in breadth, was cleared through the jungle "from the pier to the camp, 1½ miles distant.

"By the end of November the works executed at Zula comprised the nearly

* See pages 3, 19, 72, 86, and 107.

"finished stone pier, a cleared road to camp from the sea, the clearing out of the old "village wells in the bed of the Huddas River, and the construction of 20 new ones, "whereby about 2,000 men and 2,000 animals were watered daily, a large store shed, and "a water-shoot 480 feet in length, raised on trestles above the sea, for conveying to the "tanks which were being collected on shore sweet water condensed by Her Majesty's ship "'Satellite.'

"The satisfactory progress made with the Zula works generally up to the close of "the year is attributable to the untiring zeal and energy displayed by the officer in "executive charge, Captain W. W. Goodfellow, Field Engineer, and second in com- "mand of Royal Engineers with the Force.

"It is unnecessary for me to bring this officer's subsequent services to His "Excellency's notice, those services having been performed under His Excellency's own "observation. I would wish, however, to record how highly I appreciate Captain W. W. "Goodfellow's services, and how much I feel indebted to him for his support and "example, and for the cheerfulness and fertility of resource he has so constantly "displayed.

"On his Excellency's arrival at Zula early in January, many additional Commis- "sariat and other sheds had been erected, and the commencement made of a second pier, "a pile pier, the materials for which had been prepared and sent out from Bombay.

"Captain Chrystie, R.E., Field Engineer, assumed charge of the Zula works on "the 1st January, and in his hands the pile pier made rapid progress, and was nearly "completed up to the artificial island by the 5th of February, when Captain Chrystie was "ordered to Senafé, and was relieved at Zula by Captain Wood, R.E., Field Engineer.

"Captain Wood completed the pile pier, and built a new head to the stone pier, "greatly improving it. Captain Wood's work was distinguished by its solidity and per- "manent character. That the piers were not damaged by the late gales is attributable to "this officer's good work at the head of the piers. Captain Wood was unfortunately "taken ill, and had to go on board the hospital ship; Lieutenant Lee, Royal Engineers, "Assistant Field Engineer, assuming charge of the Zula works.

"I have much pleasure in testifying to the excellent character of the works "carried out by this officer, who has had many years' experience on public works.

"Lieutenant Lee completed the works at Zula as they now stand.

"Railway.

"A tramway having been proposed to be laid on the lowland country between Railway.
"Zula and the base of the mountains at Kumayh, a distance of about 12 miles, Lieutenant
"Willans, R.E., Assistant Field Engineer, commenced surveying the line in November,
"and the works were commenced in December, when the ships with the plant from
"Bombay began to arrive.

"An iron girder bridge of three spans of 20 feet was constructed over a branch Girder bridge.
"of the Hadas River in December, and about a mile of earthworks were constructed
"and rails laid by the end of January.

"Six miles of railway, with a branch of half a-mile to the Commissariat sheds, Length of line completed.
"were completed by the 19th February, and the Commissariat Department commenced
"running all their stores and provisions to the sixth-mile siding. This enabled the Land
"Transport Train to move the whole of their animals from Zula, thus relieving the water
"condensing operations enormously, and saving considerably in time and animals in the
"trip from the coast to Senafé.

"All Commissariat and other stores now sent out to the sixth-mile siding were

"conveyed away by carts and baggage animals sent out from Kumayli, and which "returned to that post the same day.

"A second Commissariat siding was opened for traffic at the ninth mile from "Zula, on the 28th March, thus further reducing the labour of the transport animals.

"At the end of April the railway was completed within a mile of the camp at "Kumayli. The traffic on the line had now become so great that the Commissariat "Department absorbed the whole of the rolling stock. It was found that, what with the "Commissariat requirements, and the increased time taken up by the lengthened journey, "trains for the conveyance of railway plant could no longer be given. With extreme "reluctance it was then decided that the works must be brought to a close by the "construction of a loop-line and terminus at about a mile from Kumayli.

"The heat on the plains was so great when the works were being closed that "not more than five and a-half to six hours' work could be obtained from the work-people.

"By great good fortune, water was obtained from the wells at the fourth, "seventh, and ninth miles on the road, by the excavation of wells 50, 65, and 85 feet "in depth respectively at each point.

"Watering-tanks for the engines were set up by the side of the line and fed "from these wells by piping.

"A good supply of water being obtainable at the fourth mile, 'Pioneer Wells,' "the locomotive workshops were established at this place. It was also found desirable "that the whole of the locomotive establishment should be permanently situated at the "'Pioneer Wells,' so as to be close to their works.

Description of railway.

"The railway, properly speaking, is only a tramroad, so far as the rails and "rolling stock are concerned. The rails are light, and the rolling stock consists of con- "tractor's engines and trucks. Nevertheless the tramroad has been called upon to do "the duty of a railway, and it has, by constant care and management, been kept up to "the work required of it.

"The main line from Zula to Kumayli is 10½ miles in length, and altogether "12 miles 106 yards of rails have been laid. In six miles the plain rises pretty "gradually from the sea to a height of about 100 feet above that level. The railway line "then passes through a low range of hills, keeping the bank of the river. There is some "heavy work on this portion of the line in cuttings, embankments, and bridges. The "line then descends about fifty feet into the Kumayli Plain, and rises to a height of 348 "feet at the Kumayli terminus.

"Eight iron girder bridges and a large number of drains have been constructed "on the line.

"The whole of the railway earthworks, embankments, cuttings, bridges, and "drains have been executed by troops of the Force and by men of the Army Works "Corps. A few civilian plate-layers, some from Bombay, and some obtained from the "shipping and departments of the Army, have superintended the plate-laying. The "greater portion of the railway works have been constructed by the 23rd Punjab Pioneers, "commanded by Major Chamberlain, and the 2nd Bombay Grenadiers, under Lieutenant- "Colonel Muter. I am particularly desirous that the services of these two corps, in per- "forming a duty so utterly new to them, should be brought to his Excellency's notice. "The cheerfulness and willingness on the works of the men of these corps, inspired by "the spirit and tone of their officers, have been most conspicuous, and is deserving of "the highest praise. The Punjab Pioneers are very clever, and quite artistic in all they "do, under the guidance of their skilful commander. The wells made by them at the "station called 'Pioneers' Wells,' and at the Bridge, are models of skill in well-digging.

"The 2nd Grenadiers worked on the line during the hot season, but they always "evinced the greatest alacrity and desire to further the work.

"I respectfully wish to bring to His Excellency's special notice the services of "Captain Darrah, R.E., Field Engineer, who has superintended the railway works from the "commencement to the completion, as well as the services of his assistants, Lieutenant "Willans, R.E., Assistant Field Engineer, Lieutenant Pennefather, R.E., Assistant Field "Engineer, Lieutenant Baird, R.E., Assistant Field Engineer, Lieutenant Graham, "108th Regiment, Assistant Field Engineer.

"Lieutenant Willans, R.E., commenced the railway survey on the 16th "November, and he remained on the works, superintending the bridges, till the 15th "March, when he was ordered to the front. He returned to Zula on 20th May, and "resumed his position on the railway.

"Lieutenant Pennefather joined the railway works on the 23rd December, and "he has never left the works for a day up to this time.

"Lieutenant Baird, R.E., arrived from Bombay on the 28th February, and he at "once took up the appointment of traffic manager of the line.

"Lieutenant Graham, 108th Regiment, joined Captain Darrah on the 20th "January, and he has been on the works the whole campaign.

"As the railway works have been carried out under my own supervision, I am "able to speak from personal observation of the devotion to duty displayed by Captain "Darrah and his assistants.

"Early and late, day by day, for upwards of five months, have these officers, "under most trying circumstances of climate, strained to the utmost of their ability "and strength to further the success of the Expedition so far as the railway was con-"cerned.

"His Excellency should be informed of the exemplary conduct throughout of "the undermentioned non-commissioned officers employed on the railway works from "nearly their commencement to the completion. All skilled men, the value of their "services have been increased by their good conduct:—

"Corporal Heinig, R.E.; Serjeant Webb, Corporal Recks, Privates Cooper and "Cox, 1st Battalion 4th King's Own Regiment; Private Miller, 45th Foot.

"The difficulties of constructing a railway with unprofessional labour have been "greatly enhanced from the circumstance of five different descriptions of rails having "been provided for the work on four different principles of fixing.

"Had it been possible to land and carefully stack each description of rail prior "to plate-laying, the variation in the rails would not have been the cause of much "inconvenience.

"As it happened, this difference of pattern proved most annoying, for the dis-"embarkation of the plant just kept pace with the requirements of the works, and the "line was fed from hand to mouth throughout, consequently there was no time for "sorting and stacking.

"The Kurrachee rails have given the greatest trouble in laying and mainte-"nance, being very much worn and bent, and being a joint chair and not a fish-"plated rail.

"The 40 lb. fish-plated rail would have been more useful if the fish-plate "holes had fitted those in the rails. In five cases out of ten they did not fit, nor would "the bolts go through the holes.

"My opinion is that railways required for the operations of war should be "carried out entirely as a civil work by engineers and contractors who make it their

"business to construct railways, and who would bring to bear on the works their own "experience and that of professional establishments.

"In the present case it is worthy of remark, as a set-off, that, although the rail- "way works have not been constructed so well and so quickly as they would have been "by a professional contractor, yet the line was made in time to be exceedingly useful, "and the difference of expense between the two systems is very great.

"I understand the tender of an eminent contractor for making the Abyssinian "railway was at the rate of 6,000*l.* a mile, which would have brought up the cost of the "whole line to about 72,000*l.*, exclusive of rails and plant.

Cost of railways.

"As near as I can ascertain, the cost of making the Abyssinian railway has been "about 6,000*l.*, exclusive of rails and plant.

"It must not be supposed from this statement that the contractor (had the line "been let to him) would have made a large profit. His expenses would have been very "great for labour and superintendence.

"*Roads.*

Roads.

"Early in November last year, when it was determined to explore the Kumayli "Pass, No. 1 Company of Bombay Sappers were sent to work in the Suru Defile under "Lieutenant Jopp, R.E., Assistant Field Engineer.

Kumayli Pass.

"From the time of the Kumayli Pass being adopted as a route, strenuous exer- "tions were made to construct a cart road through the Suru Defile. The road was com- "pleted by the 31st January, the works having been well carried out under the directions "of Lieutenant A. K. Jopp. R.E., Lieutenant (now Captain) Sturt, R.E., and Lieutenant "Coaker, R.E., who are deserving of His Excellency's notice.

Suru Defile.

"The Suru Defile occupied the labour of two companies of Sappers and two "companies of Beloochees for three months. The road, when completed, had a breadth "of about 10 feet, and was constructed on the principle of ramping over boulders and "obstacles, instead of attempting their removal by blasting. The boulders which it was "necessary to remove with the miner's drill, were found to be of the toughest descrip- "tion of granite, and for some time the Sappers were unable to make any impression "upon them.

Cart road between Zula and Adigrat.

"Almost simultaneously with the construction of the Suru Defile Road was the "work of clearing a cart road the whole way from Zula to Senafé, a distance of 63 miles, "taken in hand. The rise in this road, in the length of 63 miles, is 7,400 feet.

"About a mile of defile road at Rahaguddy had to be built much in the same "manner as the Suru; and at 1½ miles from Senafé a ghât road, 1½ miles in length, "had to be cut out of the mountain side.

"The whole road was open for cart traffic in the early days of February.

"The road was kept in a perfect state of repair up to the 8th of May, when "thunder storms commenced breaking over the passes and doing serious damage to the "made roads.

Cleared road from Adigrat to Magdála.

"A cart road was also made between Senafé and Adigrat, a further distance of "37 miles. Two pieces of ghât road occur on this line, the Guna-guna and Karsaba "Ghâts. From Adigrat to Antalo so much of the route was cleared as to render it "passable for the G-14 Battery to be driven to that post.

"Beyond Antalo to Magdála the road can only be described as a track passable for "laden mules and elephants.

"A detailed description of the roads will be found in the accompanying report.

"An alternative route was commenced by the Hadas River, but was abandoned "through sickness of the troops engaged, and from other causes.

"Captain Hills, R.E., Field Engineer, who held the post of Field Engineer "at Kumayli and Senafe during the campaign, has exerted himself in a very creditable "manner in exploring for the best line of road to be taken to the Hadas.

"*Water Supply.*

"When large bodies of troops and followers had landed at Zula, and animals of "the Transport Train accumulated in great numbers, it became necessary to condense "a supply of water. Water supply.

"About 200 tons of water were landed daily from steamers in the harbour by "means of a wooden shoot which conveyed the water to iron tanks, from which a long "wooden trough was kept constantly filled. Amount landed daily.

"The troops soon moved up country, and, on the opening of the sixth-mile siding "on the railway, the whole of the Transport Train animals being moved to Kumayli, the "supply required from the condensers became greatly reduced.

"The allowance of water to every individual in Zula, officers, soldiers, and "followers, has been 1½ gallons daily per head, a by no means wasteful allowance when "the climate is considered.

"A water supply for about 5,000 animals, and proportion of men, was provided "at Kumayli in December and January, but on these numbers being greatly increased in "March, it became necessary to increase this water supply.

"Force, suction, and chain pumps were set up at the wells, capable of watering "10,000 to 15,000 animals and 5,000 men, and long ranges of troughs were provided, "rendering the watering of animals an easy operation.

"Lieutenant Le Messurier, R.E., Assistant Field Engineer, came out from "England specially to set up the new American tube wells and pumps at the different "posts; this energetic officer took charge of the whole water supply generally, and, with "his assistants, inaugurated and carried out a very efficient system of water supply at "each post, as far as Adigrat.

"Lieutenant Le Messurier's creditable exertions have doubtless come under his "Excellency's own observation; it only remains, therefore, for me to bring to his Excel-"lency's favourable notice the services of Lieutenant Le Messurier's assistants, Lieutenant "Clarke, R.E., Lieutenant Sargeaunt, R.E., Lieutenant Protheroe, M.S.C., Lieutenant "Mainwaring, R.E., Assistant Field Engineers.

"The waterworks between Kumayli and Adigrat being of a permanent character, "are detailed in the accompanying Report. Waterworks between Kumayli and Adigrat.

"Lieutenant Le Messurier has favoured me with the following remarks upon the "water supply between Adigrat and Magdāla:—

"'Beyond Adigrat no stores could be carried, and paved slopes were made into the "'nullahs for the animals, Norton's tube wells supplying drinking water.

"'Beyond Antalo, four Norton's tubes and driving apparatus, complete, were carried "'on six mules as far as Lat. They were then of necessity left behind, and finally "'reached Magdāla on the eve of our departure, enabling us, however, to obtain a supply "'of pure drinking water, after a want of it for sixty hours. Antalo.

"'Water was obtained from the following sources:—

"'Lake Ashangi, measuring 3½ miles by 2½ miles, and 17 fathoms in depth, and "'possessing the peculiarity of having no outlet; the River Ayangua, rising at Lat, and Ashangi.

"'said by some to be the source of the Takazze; the Tellare River crossed at Dildi
"'the Takazze River crossed at Muja.

Wadela. "'On the Wadela Plateau the supply was obtained from the Santara, Gazo, Gashoss
"'and Fanta Rivers, running into the Jedda.

Jedda. "'The Jedda River, about 2,500 feet below the Wadela and Talanta Plateau, was dry
"'on the advance of the Army on 4th of April, and nearly so on its return on 23rd of April.
"'The distance in a straight line from one plain to the other is less than three miles,
"'and the journey to accomplish by the King's road nearly ten miles.

Talanta. "'Water was found on Talanta Plain in pools in the small valley.
"'The formation here apparently was basaltic trap, while on the Wadela it was sand-
"'stone.

Bashilo. "'The Bashilo River, 8 miles north of Fahla, running and knee deep, after several
"severe thunder showers, was the only water crossed deserving the name of river.
"'It was the main source of supply to the Army when encamped before Magdāla.

Magdāla. "'The water in the small native wells in the immediate vicinity of Magdāla was
"unfit for any purpose, owing to the number of dead animals, &c., and the small supply
"obtained from the well dug by the troops, though clean, was of a peculiarly bitter taste.
"'A medical officer assured me that it was not injurious.'

Telegraph. *"Telegraph.*

"Lieutenant St. John's telegraphic operations have not come under my observa-
"tion beyond the Passes.

"A Statistical Report by Lieutenant St. John is contained in the accompanying
"Report of engineering operations.

"I can, however, bear testimony to the value of Lieutenant St. John's telegraph.

"I may say the telegraphic communication has been simply invaluable, and it has
"not failed when most wanted.

Engineer park. *"Engineer Park.*

"I have now to bring to his Excellency's notice that the Engineer park, having
"had the advantage of being formed with great care in Bombay, under Captain Greig's
"directions, has always been enabled to comply with the requisitions made upon it. It
"has fulfilled its purpose completely, and, therefore, calls for no further remarks.

"Captain Greig has expressed himself well satisfied with the exertions of his
"assistants, Lieutenant Saxton, R.E., Assistant Field Engineer, and Cornet Dalrymple,
"Assistant Field Engineer.

"In concluding this remaining portion of my Report, it remains for me to bring
"to his Excellency's favourable notice the services of my Brigade-Major, Captain Charles
"Goodfellow, V.C., R.E., Field Engineer, which have been so valuable by reason of his
"energy of character and experience in the conduct and management of public works.

"Royal Engineers and Sappers and Miners.

"Of the Royal Engineers and Madras and Bombay Sappers and Miners, the
10th Company R.E. "undermentioned companies have been present with the Force:—10th Company Royal
"Engineers. Madras Sappers and Miners, G, H, and K Companies. Bombay Sappers and
Miners, Nos. 1, 2, 3, and 4 Companies.

"The 10th Company, Royal Engineers, are divided into, (1) Telegraphists, (2)
"Signallers, (3) Well-borers, and (4) Photographists.

"The telegraphists have been employed between Zula and Antalo only, under the "orders of Lieutenant Puzey, and under the general superintendence of Lieutenant "St. John, R.E.

"The signallers made themselves useful to the Army the whole way from Senafè to "Magdàla, and their services were more especially valuable whilst the Army crossed the "ravines of the Takazze, the Jedda, and the Bashilo, and on the advance on Magdàla, in "communicating with distant points relative to placing guns in position.

"His Excellency is aware of the services of Lieutenant Morgan, R.E., the officer "under whom these men worked so willingly and efficiently. Army signallers.

"The well-borers made themselves generally useful on the line of march from "Kumayli, to close to Magdàla, proving the efficacy of the American pumps as applicable "to the line of march of an army. The operations of these men were judiciously "directed by Lieutenant Le Messurier, C.E. Well-borers.

"The photographers have completed a series of views from Zula to Magdàla, "illustrating all points of interest on the line of march of the Army. It is to be regretted "that rather more professional and artistic knowledge was not brought to bear on this "subject. Some beautiful effects of light and shade have been lost, owing to the views "not having been taken at the proper time of day. Photographers.

"Major Pritchard, R.E., commanded the 10th Company Royal Engineers, and was "with the photographers throughout the Expedition.

"*Madras Sappers.*

"Major H. N. D. Prendergast, V.C., R.E., commanded the detachment, consisting "of G, H, and K Companies; Staff Officer with the detachment, Captain Foord. Madras Sappers.

"The G Company* has been posted at Zula and Kumayli during the whole cam- "paign. The services performed by this company on the public works at Zula, on the "railway, and on the Kumayli waterworks, have been excellent.

"The Sepoys of this company excavated a well on the railway line, 85 feet in "depth, without lining of any kind, and proved themselves very skilful workmen.

"I have much pleasure in recording the good services rendered by Lieutenant "Morris, R.E., commanding this company, in superintending the water arrangements at "Kumayli. These services have proved most beneficial to the Transport Train Estab- "lishment at that post.

"Lieutenants Protheroe, S. C., and Mainwaring, R. E., have been before mentioned.

"The H Company† has been employed during the whole campaign on the public "works at Zula, and has been most industrious.

"This company has shown itself ever ready and willing to undertake any work "required of it.

"Lieutenant Pennycuick, R.E., commanding the H Company, appears to have "conducted the duties of his position in an efficient manner.

"Lieutenant Cunningham, R.E., has been employed on detached duty at Antalo.

"K Company.‡—This company commenced work in the Senafè Pass after a short "stay at Zula, and afterwards, when joined by head-quarters, improved the track

* G.—Lieutenant Morris, R.E., Commanding; Lieutenant Protheroe, S. C.; Lieutenant Mainwaring, R.E.

† H.—Lieutenant Pennycuick, R.E., Commanding; Lieutenant Cunningham, R.E.

‡ K.—Captain Elliott, N.I., Commanding; Lieutenant Bird, S.C.; Lieutenant Cooker, R.E.

" route between Antalo and Magdāla, rendering it suitable for laden mules and elephants,
" and was present at the action of Arogie, and taking of Magdāla.

" Captain Elliott, N.I., Commanding, Lieutenant Bird being subaltern officer.

" Lieutenant Coaker, R.E., was detached from the company on its arrival at
" Zula, and worked with the 4th Company Bombay Sappers throughout the campaign.

" *Bombay Sappers and Miners.*

Bombay Sappers.

" With Head-Quarters, Captain Macdonnell, R.E., commanding; Lieutenant
" Merewether, R.E., Adjutant.

" No. 1 Company* arrived at Zula from Aden in October. After a short time,
" this company was sent to the Suru Defile, and worked on the road in the pass till
" December. It then marched to Senafè, and was employed on the ghât till the end of
" January, when it was moved on to Adigrat, working on the road between Senafè and
" Adigrat, more particularly on the Karsaba Ghât, for which piece of road great credit
" is due.

" The company then proceeded to Antalo, and was employed in constructing the
" telegraph, returning to the Suru Pass in time to repair the damage done during the
" month of May, and remaining there on duty till all the troops had cleared out.

" This company was commanded by Lieutenant Newport, and I consider did
" very efficient service under their excellent officer's command.

" Lieutenant Osborne, R.E., was attached to this company in January, and
" subsequently performed the duties of Adjutant from January to May, during the time
" Lieutenant Merewether was absent.

" No. 2 Company.†—This company arrived in this country with head-quarters
" early in December, and, after a short stay at Zula, worked on the Senafè Pass, prin-
" cipally in the Suru Defile, for which the company deserves great praise. The company
" was then pushed on to Antalo, and thence to Magdāla, assisting in the road-making,
" and was present at the action of the 10th of April, and capture of Magdāla on
" the 13th.

" Captain Sturt, R.E., commanded, and also worked this company, an arrangement
" which was most beneficial to the interests of the company.

" No. 3 Company.‡—This company worked for two months at Zula, on the stone
" pier; the men were employed eight hours a-day. It was then moved up into the pass,
" and worked on the Senafè Ghât. It also worked between Senafè and Adigrat, and
" between Adigrat and Antalo. Assisted in road work between Antalo and Magdāla,
" and was present in the action of the 10th, and taking of Magdāla on the 13th April.

" Captain Leslie, S.C., commanded, and the company worked under the orders of
Lieutenant Jopp, R.E.

" 4th Company.§—Worked two months at Zula, on the stone pier, eight hours
" a-day; was then employed at Lower Suru, and subsequently in the Senafè Ghât.
" Assisted in making the road between Senafè and Adigrat and Adigrat and Antalo; also
" was employed generally in road-making between Antalo and Magdāla, and was present
" in the action of the 10th, and capture of Magdāla on the 13th April.

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* No. 1 Company.—Lieutenant Newport, S.C., Commanding; Lieutenant Osborne, R.E.
† No. 2 Company.—Captain Sturt, R.E., Commanding.
‡ No. 3 Company.—Captain Leslie, S.C., Commanding.
§ No. 4 Company.—Lieutenant Leacock, Commanding.

" Lieutenant Leacock, S.C., commanded this company, working under the directions " of Lieutenant Coaker, R.E.

" Captain Macdonnell commanded the Bombay Sappers, three companies, and Major " Prendergast, V.C., the K Company Madras Sappers and Miners, during the action " of the 10th April.

" Major Pritchard, R.E., being senior officer of Engineers with troops, com- " manded on the 13th at the capture of Magdála, the following details:—10th Company. " Royal Engineers, K Company Madras Sappers, 2nd, 3rd, and 4th Companies Bombay " Sappers; the distribution of Engineer officers and men being under Captain W. W. " Goodfellow, second in command of Royal Engineers with the Force."

PROGRESS REPORT of ENGINEERING OPERATIONS carried out by the Engineer Department, from October 1867 to May 1868.

No.	Name and Locality of Work.	Date of Commencement.	Work Executed.	Date of Completion.	Remarks.	
	ANNESLEY BAY, ZULA.					
1	Stone Pier .. (For landing troops, elephants, horses, Transport Train animals, and for general traffic.)	Oct. 1867 ..	Length of pier .. 943 Feet. Length of head .. 156 Breadth of head .. 92 General breadth .. 27 Depth of water at head at low water springs .. .. 7. The stone pier since its first completion has been raised nearly 2 ft. in height over its whole surface. The piling and platform head has also been added.	Jan. 1868 ..	This pier is built of dry rubble stone brought from the opposite side of the bay. The increased width of the head provides accommodation for a condenser and for landing and embarking purposes. The head of the pier is piled, and a platform connects the piles and stone pier. Fender piles protect the pier all round in deep water from damage. The south side of pier as well as the whole of the head has a wooden coping for protection. Rails for the railway traverse the whole length of the pier, and a siding is also provided at the head. Stores delivered at the head, being at once placed on railway trucks, have been run up to the different depôts. Troops for embarkation are taken by rail to the pier head, where they at once embark on the lighters, and are towed out to the ships by steam-tugs.	Stone pier.

Progress Report of Engineering Operations, &c.—*cont.*

	No.	Name and Locality of Work.	Date of Commencement.	Work Executed.	Date of Completion.	Remarks.
Pile pier.	2	Pile Pier .. (For Commissariat only.)	Dec. 1867 ..	Feet. Length of embanked portion of pier .. 380 Length of pile pier to artificial island of stone .. .. 640 Length of stone island 114 Length of pile pier island .. .. 70 Total length of pier . 1,204 Breadth of pier .. 30 Breadth of stone island 65 Depth of water at head at low springs .. 8 Depth of water at head at high-water springs 13	..	The land portion of the pier is constructed of piles, driven 10 feet apart, strong sheeting behind the piles supporting the earth filling. The pile pier is constructed on piers of four piles each at 10 feet apart, central distances. The head of pier and portion in deep water is well protected by strong fender piles, placed one foot from the pier and five feet apart. A double line of rails traverses the whole length of the pier
Condenser Island.	3	Condenser Island	Nov. 1867 .	An artificial island of stone, 80 ft. in length and 60 ft. in breadth, piled on the eastern side, with wooden platform to piles.	April 1868 .	A 4,000 gallon condenser erected and working on the island.
Water shoot.	4	Water Shoot ..	Dec. 1867 ..	The water shoot, 168 square inches in section, has been made 770 ft. in length and fixed on trestles above the sea, averaging in height 13 ft.	Jan. 7, 1868	For conveying water from the condenser on the island to the tank depôt on shore.
Sea-wall.	5	Sea Wall and Embankment.	Nov. 1867 ..	Rubble stone sea-wall, averaging in height 6 feet, in length .. 917 Sea-wall, faced with biscuit barrels filled with sand and supported with sand-bags .. .. 850 These sea-walls are well backed with earth.	April 1868. .	Constructed to keep the sea out of the immediate landing-place, to shorten the piers, and to avoid the necessity of filling a large reclamation. Sluices let out rain-water.
Reclamation.	6	Reclamation ..	Nov. 1867 ..	16,000 s. yds. raised 2 feet. 2,333 „ „ 6 inches.	Feb. 1868 ..	Partial reclamations made at lowest levels to guide the drainage.
Grave yard.	7	Grave Yard ..	Feb. 1868 ..	Ground enclosed with a short wooden railing, 318 running feet. 100 wooden crosses of stout teak, made for numbering the graves.	April 1868 .	

Progress Report of Engineering Operations, &c.—*cont.*

No.	Name and Locality of Works.	Date of Commencement.	Work Executed.	Date of Completion.	Remarks.
			Feet.		
8	Buildings (teak framing), Commissariat.	Oct. 1867 ..	1 shed, plank roof and walling .. 120 by 20	Dec. 1867 ..	Teak-framed sheds for Commissariat, 1,000 running feet in length, 20 feet in breadth
			1 do. do. .. 300 „ 20	Jan. 1868 ..	
			1 do., corrugated iron roof and plank walls .. 300 „ 20	Feb. 1868 ..	
			1 do. mat walls 270 „ 20		
	Engineer's Office	Oct. 1867 ..	1 do. planked roof and walls .. 28 „ 13	Dec. 1867 ..	
	Condenser Island	Jan. 1868 ..	1 do., planked roof and walling 15 „ 15	March 1868	
	Over Condenser Stone Pier.	Jan. 1868 ..	1 do., planked roof and walling 34 „ 24	Feb. 1868 ..	
	Post Office ..	Dec. 1867 ..	Teak-framed shed with plank roof and walls, and a second corrugated iron roof 6 inches above planks . 28 „ 13	March 1868.	
			Additional room of rafters and matting added 30 „ 13	April 1868 .	
	Ice House ..	March 1868	Roof and walls of deal planking, 16 ft. in height 30 „ 30	April 1868 .	
	Shed over Water Tanks.	Feb. 1868 ..	Shed .. .. .. 36½ „ 17	March 1868.	
	Sentry Boxes.	March 1868	2 large .. .. 12 „ 6	March 1868.	
			10 small .. 4 „ 4 (plank roofed and 8 ft. in height.)		
	Sheds.				
	Rafters, reed mats. Walls and roof thatched with jowlies.				
	Commissariat ..	..	3 sheds.. .. 120 „ 20	Dec. 1867	
	Land Transport ..	..	6 do. .. .. 120 „ 20		
	Ordnance ..	..	3 do. .. .. 120 „ 20		
	Hospital ..	..	2 do. .. .. 120 „ 20	to	
	Engineer Department.	..	4 do. .. .. 120 „ 20		
	Embarkation, Pendall.	..	1 do. .. .. 200 „ 20	May 1868	
	General Hospital	March 1868	Teak framing with plank, walls, mat, and thatched roof, glazed windows, outside dimensions 340 by 46 feet. Height of walls 17 feet.	April 1868	This building consists of fever wards 99 feet, 99 feet, 95 feet, and 22 feet respectively, by 22 feet in breadth and 17 feet in height; a verandah 12 feet wide encircles the whole building.

Progress Report of Engineering Operations, &c.—*cont.*

No.	Name and Locality of Works.	Date of Commencement.	Work Executed.		Date of Completion.	Remarks.
	Hospital Quarters.	..	Two quarters containing rooms 16 by 16 by 12 feet each, and 16 by 8 by 12 feet. Two bath rooms and verandahs 8 by 8 feet. One quarter containing rooms 14 by 14 by 12 ft., 14 by 8 ft., 8 by 8 ft. One quarter containing rooms and verandahs 16 by 16 by 12¾ feet in breadth, front, and rear 8 feet. Two cook-house 41½ by 12½ by 9 feet corrugated iron roof and walls. Dead-house 12 by 12 by 10 feet.			
	Reservoirs ..	April 1868 .	One tank 34½ by 11 by 5 ft. One tank 52 by 11 by 6 feet, constructed of strong wooden framing planked and lined with zinc.			
			Permanent Way.	Mls. yds.		
	Railway, Zula to Kumayli.	Dec. 1867 ..	Main line ..	10 623	May 1868 .	Gauge of railway 5 feet 6 inches. Five descriptions of rails used. 1. Flanged 30 lb.; too light a rail. 2. Flanged 40 lb., fish-plated; third best. 3. Flanged 45 lb., fish-plated; second best. 4. Flanged 45 lb., Kurrachee, not fish-plated, joint chairs; bad. 5. 50 lb., double-headed, with chairs; best.
			Branch line ..	0 866		
			Sidings, &c. Yds.			
			Stone pier head 93			
			,, tail 100			
			Double Line.			
			Commissariat pier .. 555			
			Siding, commissariat shed .. 82			
			Siding, Zula Station .. 60			
			Pioneers' Well Station.			
			Loop line .. 586			
			Sick siding 154			
			Commissariat Depôts.			
			Loop line at No. 1 .. 224			
			Loop line at No. 2 .. 170			
			Kumayli Terminus.			
			Loop line .. 112	1 376		
				12 105		

Progress Report of Engineering Operations, &c.—*cont.*

No.	Name and Locality of Work.	Date of Commencement.	Work Executed.			Date of Completion.	Remarks.
	RAILWAY.		Number of Water Ways.	Width of each Opening.	Depth of Bed from bottom of Girder.		*Construction of Bridges.* Railway.
	Bridges and Drains.						Iron girders, the gauge of the railway apart from centre to centre, supported on wooden uprights, braced and strutted above ground, joined by sills deeply sunk below ground. Sleepers secured by being notched to fit girders; girders further secured from movement by tie rods and strap sto uprights. Supports to girders placed well into embankment, so as to be in great measure independent of wing walls, which are of dry rubble.
	No. 1 Bridge over Huddas.			Ft. ins.	Ft. ins.		
	No. 2.						
	No. 3.		6	11 6	4 9		
	No. 4.		2	10 0	2 6		
	No. 5.		2	16 0	1 6		
	No. 6. Kumayli Torrent.		2	20 0	7 6		
	No. 7.		2	10 6	5 6		
	No. 8.		3	20 0	12 0		
	Total, 8 bridges.		3	15 6	4 0		
			1	20 0	2 10		
	28 drains.		Number of each Sort.	Number of Openings.	Width of each Opening.		*Construction of Drains.*
					Ft. ins.		Two of similar construction to bridges. The others wooden uprights at sleeper intervals, uprights let well into sills, buried below ground, wings retained by stout planking, and, where necessary, rough rubble.
			3	3	2 0		
			5	2	2 0		
			2	3	6 0		
			2	1	2 0		
			7	4	12 6		
			1	1	2 8		
			1	1	1 6		
			2	3	2 3		
			1	6	1 9		
			1	5	3 7½		
			1	2	16 6		
			1	1	2 3		
			1	12	3 0		
	Station at Zula ..	..	Platform, 150 feet long. Office, 30 by 17 feet. Shed for shelter, with seats, 93½ by 16½ feet. Shed for stores, and carpenter's workshop. A well (salt) with pump fixed for watering station and neighbourhood. Pointsman's hut.			..	Platform of convenient height for trucks in use, horizontal planking against vertically buried sleepers support the platform embankment; office entirely built of biscuit cases obtained from commissariat; shed of Aden material.

Progress Report of Engineering Operations, &c.—*cont.*

No.	Name and Locality of Work.	Date of Commencement.	Work Executed.	Date of Completion.	Remarks.
	Station at Pioneers Well.	..	Water supplied to engines for the Pioneer Wells, 50 feet deep.	..	Well is 50 feet deep, a tank is raised 30 feet above that, the water is raised into this tank, and the engines at a distance of about 900 feet are by means of piping watered by gravity only; piping is 2 inches diameter.
	Watering station at Willans Bridge over Kumayli Torrent,	..	Well dug for watering, 67 feet deep.	..	Well is close to line, and engines are watered by a force pump from tubs round the well kept ready filled.
	Station at "Kumayli Plain."	..	Siding for Commissariat, well dug 87 feet deep, and water supplied to engines from distance of 1,200 feet. Stand pipe with cock for drinking.	..	The well water is forced into a raised reservoir 114 feet from well, and is led by 4-inch piping 1,200 feet, when a stand pipe feeds the engines.
	Station at "Kumayli Terminus."	..	Two sheds, each 120 by 20 feet. Wooden platform. Waiting shed for officers. Latrines for troops. Ground cleared sufficient to parade a regiment in open column		
	Railway Telegraph.	..	Stations established at Zula,— Pioneers Wells and Kumayli Terminus.		
	Electric Telegraph.	24 Dec. 1867	Miles. Zula to Kumayli .. 12		Lieutenant St. John, R.E., commenced work with half a company of Madras Sappers, and some Shohoes.
		8 Jan. 1868	Kumayli to Suru .. 14		
		20 Jan. 1868	Suru to Undul .. 13		
		1 Feb. 1868	Undul to Rahaguddy . 16		
		19 Feb. 1868	Rahaguddy to Senafé . 8		
		9 Feb. 1868	Senafé to Guna-guna .. 13		From the 6th mile from Zula to Rahagedi supports cut from mimosa jungle only used.
		15 Feb. 1868	Guna-guna to Adigrat and beyond 8		On the 12th Jan. the Madras Sappers were replaced by a company of 23rd Punjab Pioneers under Lieut. Paterson.
		24 Feb. 1868	2nd line (railway) .. 4		Posts for the line from Rahagedi to Senafé and six miles beyond cut from jungle by 33rd Regiment. Then 11 miles of Indian Bamboos and remaining 21 miles on juniper poles purchased from Abyssinians at Focada and Adigrat.
			Total miles .. 113		

Progress Report of Engineering Operations, &c.—*cont.*

No.	Name and Locality of Work.	Date of Commencement.	Work Executed.	Date of Completion.	Remarks.
	ROADS.				Roads.
	Cart road from Zula to Senafé. Senafé (Post No. 2.)	Nov. 1867	A cart road 63 miles in length, ascending 7,464 feet.	31 Jan. 1868	Principal works in the rocky gorges of the Suru and Rahagedi Defiles and Senafé Ghât, where the road is in hillside cutting.
	Senafé to Adigrat	1 Feb. 1868	A good cart road, 37 miles.	26 Jan. 1868	Principal work the Gunaguna and Karsaba Ghâts, elevation 200 and 400 feet respectively.
	Adigrat to Antalo (Post No. 3.)	5 Feb. 1868	This portion of the route of the Army, though not used for cart traffic, was traversed by the 12-pr. Armstrong battery on wheels. Distance, 78½ miles.	1 Mar. 1868	Principal works, ravine between Adigrat and Mai Wahiz, descent to Dolo, and across the hills between Eikhullet and Antalo.
	Antalo to Lat ..	27 Feb. 1868	Good cleared track for mules and elephants. Distance, 73 miles.	20 Mar. 1868	Principal works: the Alaji pass and the hills between Astala and Makan. Also between Makan and Ashangi, and between Muesgita and Lat.
	Lat to Santara ..	..	Good cleared track for mules and elephants. Distance, 56 miles.	March 1868	Principal works: descent to Marawah, and across the hills between Marawah and Dildi. Also the ascent of the Wofjat hill leading to Wandach, passage of the Takazze, and steep ascent (3,000 feet) to Santara on the Wadela plateau.
	Santara to Abdikum.	.. ..	Good cleared track for mules and elephants. Distance 30 miles.	April 1868	Very little work required on this portion of the route.
	Abdikum to the Talanta Plateau.	April 1868	Ditto ditto ditto Distance 16 miles.	April 1868	Much heavy work was spared the troops, owing to Theodore's road across the valley of the Jedda being adopted as a suitable route for the Army to gain the Talanta Plateau.
	Talanta Plateau to Arogie and Magdala.	9 April 1868	Ditto ditto ditto Distance 14 miles.	13 April 1868	The above remarks are also applicable to the route from Talanta Plateau to Arogie and Magdala, for no work was required across the plateau, and Theodore's road from the plateau to the Magdala Amba, over the Arogie flat, was adopted.

Progress Report of Engineering Operations, &c.—*cont.*

	No.	Name and Locality of Work.	Date of Commencement.	Work Executed.	Date of Completion.	Remarks.
		Zula to Senafé by the Hadas Pass.	23 Feb. 1868	Senafé to Tekonda; 13 miles over rough country opened as a mule track; also from Zula to Humhummoo, 21 miles, cleared as a cart road.	.. ..	This was intended as an alternative line from Zula to the highlands, by the Hadas River, but had to be abandoned owing to two causes. The working parties furnished by the troops being required with the advance force, were withdrawn from the Senafé end of the route, whilst the whole of the working party being struck down by malarious fever at Hamhammo, the Zula end of the road had to be abandoned.
Water supply		WATER SUPPLY.				
		Kumayli ..	23 Dec. 1867	4 Dipping wells. 2 Norton's tube wells. 4 Portable hand pumps. 4 Owen's double pumps. 1 Bastier 2½-in. chain pump. Troughing, 2,300 gallons capacity. Reservoir, 3,000 gal. ditto. Guard walls. Toe walls.	25 May 1868	The watering was carried on steadily till the flood of evening of 19th May. The wells, with one exception, were filled with clayey mud. The troughs have been re-erected, wells cleared out, and pumps re-fixed. Discharge of pumps, 10,000 gallons per hour. Water 16 to 18 feet below surface. Its temperature 96°.
		Upper Suru ..	22 Jan. 1868	1 Norton's tube well. 18,000 galls. of water stored. Troughing, 300 gallons capacity. New watering road. Tank for Shohoes.	14 Feb. 1868	Entirely carried away on the evening of the 19th May. 2 Portable hand pumps and 4 galvanized iron troughs supply the wants of troops. Water on the surface.
		Undul Wells ..	3 Jan. 1868	2 Norton's tube wells. 1 Bastier 2½-in. chain pump. 2 Dipping wells. Stone and lime well, 32 ft. deep. Troughing, 1,500 gallons capacity.	26 Feb. 1868	Discharge of pumps, 2,500 gallons per hour. Two portable hand pumps have been erected for use of troops returning. Water 25 to 30 feet below surface. Its temperature 89°.
		Enderta . ..	12 Feb. 1868	3 Wells: 30 to 40 have been dug.	23 Feb. 1868	No water. Water supply in a rocky pass, ¼ mile to east, improved.

Progress Report of Engineering Operations, &c.—*cont.*

No.	Name and Locality of Work.	Date of Commencement.	Work Executed.	Date of Completion.	Remarks.
	Rahagedi ..	2 Feb. 1868	Troughing, 350 gallons capacity.	14 Feb. 1868	Supplied by gravitation from springs in the rock.
	Senafé Ghât ..	14 Feb. 1868	2 Norton's tube wells. Tank, capacity 300 gallons. Road cleared.	18 Feb. 1868	Supplied by a spring.
	Senafé	4 Feb. 1868	14 Norton's tube wells. Aqueduct 250 feet long. Troughing, 700 gallons capacity. 1 Bastier 2½-in. chain pump.	23 Feb. 1868	Ground on which the works stood submerged by the flood on 22nd March, and sources of the water fouled by the drainage from the Transport lines; an objection to the position of these lines was made on 3rd Feb. 1868.
	Senafé	30 Mar. 1868	Re-erection of Bastier 2½. Ditto, Norton's tube wells. Ditto, Troughing, 96 ft. long. Large cuts for the easier flow of storm water. Protecting bank built.	31 Mar. 1868	Moved to a new position higher up stream. Irrigating channel.
	Guna-guna ..	18 Feb. 1868	1 Norton's tube well. Troughing, 100 gallons capacity.	10 Mar. 1868	Supply regulated by sluice from an old irrigating channel.
	Focada	19 Feb. 1868	5 Norton's tube wells. 2 Owen's portable pumps. Troughing, 400 gallons capacity. Native well. Sheep pond.	10 Mar. 1868	Water 4 ft. to 6 ft. below surface.
	Adigrat	22 Feb. 1868	2 Norton's tube wells. Tank, 7,000 galls. capacity. Troughing, 300 galls. do. Stream strongly dammed.	10 Mar. 1868	Supply regulated by a sluice gate. Cuts and waste weirs to carry off the storm waters.

The Establishment attached to the Engineer Department was as follows:—

Establishment.

Commissioned Officers	25
Overseers, Public Works, Bombay	2
Army Works Corps.	
Commissioned Officers	2
Artificers and labourers	973
Engineers' Park.	
Lascars	61
Artificers	42
Railway.	
European Subordinates, as Storekeepers, Station-masters, Drivers, Fitters, &c.	26
East Indian ditto	4
Railway—cont.	
Native ditto, Pointsmen, Platelayers, Signalmen, &c.	61
Zuta Works.	
Mechanical Engineers and Stokers	11
Chinese Carpenters	48
Jewish ditto	26
Masons	27
Smiths and Hammermen	26
Artificers	16
Waterworks.	
Plumbers and Pipelayers	7

The Madras and Bombay Sappers, and the 10th Company Royal Engineers have not been included in the above establishment.

Final disposal of Engineering Stores.

At the close of the campaign, the railway plant and the various engineering stores that had been supplied from England and India were disposed of in the following manner:—

The rails were left in the country in order that, if considered worth removal, a party might be sent from Aden to take them away. The locomotives were sent to Bombay. One flooring of the pile pier was removed at the close of the embarkation, but the piles were left standing. All the buildings that had been erected at Zula were required to the very last, and as the transport required for their conveyance, and the delay their removal would entail, would not repay their value, they were abandoned. The whole of the telegraph stores, including instruments, batteries, small stores, copper and homogeneous wire, and the 50 miles of covered wire (Cooper's case) brought to Abyssinia, were sent to Bombay for use in India. The army signal and photograph apparatus were sent back to England with the 10th Company Royal Engineers, and the Norton's tube wells and Bastier chain pumps were sent to Bombay.

CHAPTER XXXIV.

PHOTOGRAPHIC DEPARTMENT.

Photographic establishment sanctioned.

His Royal Highness the Field-Marshal Commanding-in-Chief, on the 13th September, 1867, forwarded to the Secretary of State for India a letter from the Director of the Royal Engineer Establishment, recommending that a party of one non-commissioned officer and six men of the Royal Engineers, trained photographers, should be attached to the Expedition, with the view of photographing sketches and plans made by Staff Officers. On the 18th September, the Secretary of State for India approved of this arrangement, which was accordingly ordered, and the party was attached to the 10th Company Royal Engineers.*

The sum of 447*l.* 6*s.* 9*d.* was sanctioned for the purchase of materials and implements for the Photographic Establishment, which consisted of two complete equipments, so arranged and packed as to be employed independently of each other.

Lieut. Anderson's Report.

The following report by Lieutenant S. Anderson, R.E., dated the 2nd August, 1869, describes the equipment sent to Abyssinia for photographic purposes.

Description of equipment.

"In consequence of the nature of the country only admitting of transport on pack "mules, it was essential that all the apparatus and stores should be packages suited to "pack-saddle transport, and each package not exceeding in weight 80 to 90 lbs. The "equipment was designed primarily for use as a field printing-press, in other words for "photographing, and, in so doing, multiplying or reducing Staff officers' sketches, and "reproducing copies of them as rapidly as possible for distribution. The largest size "plate that could be easily manipulated in the field—namely, 9 inches by 11 inches—was "provided; and a sliding and folding camera, brass-bound, was considered the strongest "and least liable to be affected by heat or insects. For the latter reason, a camera with "Russia leather gussets, which is the most portable and compact form of camera, was "considered inadmissible. A Dallmeyer's triplet lens, to cover a 12-inch by 10-inch "plate, was provided, as it is equally adapted for copying and landscapes, and can also "be used for groups. It was specified to cover a 12-inch by 10-inch plate, so as to "provide for taking in a 9-inch by 11-inch well up to the corners. For the purpose of "copying, it was requisite to provide a folding cone, which fitted to the front of the "camera, and could be removed at pleasure. A thick white quilted cover was provided, "to fit over the camera when it was exposed to the sun: and this preserved the camera "most effectually. A folding tripod stand was provided for the camera, which packed "away well in the lid of the box containing the camera and its spare stores. The bath "was made of ebonite, and was packed in a mahogany case. In the box to match the "camera box, were fitted all the materials for a day's supply; and when full, the weight "of each of these two boxes was as nearly as possible 100 lbs.

"Considerable difficulty was experienced in deciding upon the best form of tent.

* For the detailed particulars regarding the formation and organization of the 10th Company Royal Engineers, see Chapter XXII, page 136.

"The box tents of Messrs. Rouch and Thomas had the great advantage of being very "compact and portable, and very quickly as well as easily set up; but in the case of "injury from being roughly handled, or being stove in by a blow, it was considered that "they might be irretrievably placed *hors de combat* in the rough treatment experi- "enced on a campaign. The Chatham pattern tent, the framework of which was "designed by the late Captain Fowke, R.E., had the eminent advantage of being very "little liable to injury, and of being very easily repaired, if either the framework or "cover were injured. It possessed the disadvantage of taking some time to erect. It "was also considered that in the event of the tent being required for preparing paper, "as well as taking negatives, it was desirable that the men should have as much circu- "lation of air about them as possible, for the noxious fumes to escape, and the Chatham "tent was very superior to the box tent in this respect. It was decided consequently to "adopt the Chatham tent, although it required to be purposely made, and cost *5l.* more "than the box tent. An extra white cover was provided to keep the tent as cool as "possible, when necessarily pitched in the sunshine. The lid of the box in which the "tent was packed was made to unhinge easily, and served as a table in the tent. The "tent-cover was provided with several pockets. The framework of the tent was hinged, "and packed into a leather bag 3 feet 11 inches long. It was found impossible to reduce "the length of this package. For extra protection, a common deal box with a hinged "lid was provided for the bag containing legs, which necessarily formed a separate "package. For the purpose of copying plans, &c., it was necessary to provide a portable "copying table, and head-board for supporting the drawing. The copying table was "made in three leaves, extreme length of all being 7 feet 6 inches, which admitted of the "camera being placed sufficiently back from the drawing to reduce it to one-fourth of "its original size. The leaves were of mahogany, bound together by ribbons and very "long brass screws. The whole table was supported on two pairs of trestles, sufficient "to raise the table about 3 feet off the ground. The camera was made to slide mathe- "matically true between the ribbons of the table, on which the scale of reduction could "be conveniently measured, and the position of the camera adjusted accurately "accordingly. The head brass measure was made to hinge at right angles to the table, "and was made to clamp firmly and securely by brass bars to the table. The table was "supported very rigidly on the trestles by brass screws with a broad head, countersunk "in the table and passing through the leaves of the trestles, where they were firmly "bolted. This table and trestles packed into a box, the longest outside dimensions of "which were 2 feet 8 inches. This box balanced with the tent-box and small deal case "containing the framework of the tent, the whole making up an ordinary mule-load of "about 175 lbs.

"In the selection of a lens for use in the field, it was necessary to provide a lens for "copying plans, free from distortion, to be also available for views and architectural "subjects, and for taking groups. Dallmeyer's triplet achromatic lens fulfils all these "conditions. A size of this lens to cover 10-inch by 12-inch plates was selected, so as to "ensure covering well up to the edges the 9-inch by 11-inch plates provided with the "equipment. The advantages claimed for this lens by Mr. Dallmeyer, are—first, that it "produces an image free from distortion; second, that it is available for groups, views, "and copying; third, that it is free from special or chromatic aberration; fourth, that it "covers with equal illumination a circular area embracing an angle of 45°, and when "stopped down for taking views, when the time of exposure is not limited, it embraces "an angle of 80°; fifth, that the field covered by it is as flat as possible, consistent with "good marginal definition.

"By using a small stop, this lens possesses the great advantage of great depth of

" focus: in other words, it is able to take a view looking down the nave of a building, for " example, all parts of which appear in perfect focus. For groups and instantaneous " effects, the lens is used with the largest possible aperture, so as to attain the maximum " of rapidity; but for the landscape, where time of exposure is of minor importance, " smaller diaphragms are employed, bearing in mind that depth of focus can only be " obtained by the use of small stops.

" As the lens above described is not adapted for taking portraits, though it may be " used for vignette heads and sitting figures by removing the centre combination, a " portrait lens was provided with the equipment. As the expense of these portrait lenses, " to cover the larger sizes of plates, such as the 9-inch by 11-inch, or 10-inch by 12-inch, " is much increased, it was decided to select a portrait lens which, covering a plate " 8½ inches by 6 inches completely, would also cover sufficiently well the principal part " of a 9-inch by 11-inch plate. The lens selected is known as Ross's 3 A portrait lens, " wide angle and extra rapid, and is available for taking single portraits a few feet from " the sitter, or groups 20 to 30 feet distant. It is also available for taking instantaneous " views of objects, such as horses or ships, in motion. This lens only consists of a back " and front combination, both achromatic, the back combination being 4 inches in " diameter, and the front combination 3¼ inches. As it is essential in portrait lenses " that the time of exposure should be a minimum, it is necessary to provide large " lenses which admit a great flood of light, and to use as small a stop as possible. " The cost of this lense, with diaphragm, is 26*l.* 15*s.*, that of Dallmeyer's triplet " being 10*l.* 5*s.*

" A special form of portable still was adopted, the portions of which all packed into " an outer vessel of block tin, the whole apparatus packing in a deal box 2 feet long, " 1 foot 2 inches wide, and 9 inches deep.

" The remaining portion of the equipment consisted of the ordinary photographic " stores, of which no special description here is necessary. It was found that the ebonite " bottles were not well adapted for carrying the nitrate of silver bath, in consequence of " some impurity in the ebonite; and this suggested that 40-ounce glass bottles, covered " with wickerwork, would be better, and would probably be as strong. The ebonite " bottles might be carried extra, in case of accident. Three appendices are attached to " this Report:—

" 1st. The general Memorandum on this subject, prepared by General Simmons for " the information of Staff officers on the Abyssinian Expedition.

" 2nd. A detailed price list of every article and package comprising the equipment, " with the weights and sizes of the packages.

" 3rd. A few memoranda drawn up by Serjeant Harrold, the non-commissioned " officer in charge of the apparatus, detailing the result of the manner in which the " various apparatus and chemicals fulfilled their requirements. The result is very " satisfactory.

" Six photographers were attached to the 10th Company Royal Engineers in Abys- " sinia. Of these, one fell sick on arrival at Senafé. The remainder were available for " work on the march to Magdála; and in addition to the marches they made with the " other troops, they were employed in the evening and early morning taking negatives " of plans and views. The men sat up at night sensitizing paper. Impressions were " supplied, on requisition by the Quartermaster-General's Department. In all, 15,200 " prints of plans and views were supplied, all the copies of the plans being mounted on " linen.

" At Adigrat some of the chemicals fell short, and, on a telegraphic demand from the

"Commander-in-Chief, the following additional articles were despatched:—Ten 15-oz "bottles Mawson's collodion, ten 15-oz. bottles Thomas's collodion, ten quires of albu- "menized paper, six pints Newman's amber diamond negative varnish, 1 lb. bicarbonate "of soda.

"The whole equipment, after all the rough usage in Abyssinia, was brought back to "the Royal Engineer Establishment uninjured."

The following memorandum was prepared by General Simmons for the information of Staff Officers of the Force:—

General Simmons' memorandum.

"The best maps of any country which can be procured are generally very insufficient "for military purposes, furnish but little information suitable for selecting the routes of "columns, and are very deficient in the details required for manœuvring troops in the "presence of an enemy.

"It is evident, therefore, that for an army in active operations, this information "must be obtained through the exertions of the Staff, who should be continually "occupied in preparing and correcting maps, and supplying them for the guidance of "columns, whether to direct their movements by road, or their manœuvring into position "for attack.

"Every road within the lines of an army, or which can be embraced within its "operations should be examined and surveyed, the work being pushed as far to the front "and on the flanks as practicable.

"For this purpose, and for obtaining information respecting the enemy, recon- "noissances are constantly being pushed to the front and flanks, the routes taken by "which should in all cases be sketched and reported on as carefully as time and "circumstances will permit.

"Information thus obtained forms the basis upon which the movements of an army "are determined, and when those movements have been decided it becomes essential, "with a view to their exact execution, that the sketches of the routes to be traversed "and of the ground on which the manœuvres are to be made, together with such of the "information as the Commanding General may desire should be available for distribution "with his orders with the least possible delay.

"The readiest and most accurate mode of copying these sketches, as also maps, is "by photography.*

"With a view to its application for these purposes, a photographic equipment has "been arranged at the Royal Engineer Establishment at Chatham, and men of the Royal "Engineers have been instructed in its use, but as the utility of its application will "depend upon the Quartermaster-General's Department, who are charged with the "duties of obtaining and supplying information respecting routes, positions, encamp- "ments, &c., the following memoranda have been drawn up for their information:—

"I. The photographic equipment supplies the means of copying and printing plans "or documents, either full-sized or on any given reduced scale, the limit of size being

* "Photography was much used for this purpose during the late war in the United States, and in fact, the "maps so circulated which amounted to 1,200 in one month during General Grant's advance to the Rapidan, in "1864, were found essential to the progress of the army."

" that the copy of any one print shall not exceed 9 × 11 inches. If larger plans are " required, they must be produced in prints of that size, to be united afterwards by " mounting on canvas or paper. If plans have to be reduced to a less proportion than " one-fourth, it can be done by repeating the process of reduction, requiring more time " therefore, and greater expenditure of materials.

" The first copy of any plan may be expected in about two hours, after which the " copies will succeed each other at the rate of about four per hour of sunlight.

" II. It is desirable that the scales upon which all sketches are made should be, as " far as possible, uniform, for which purpose an order should be issued to the Staff " Officers composing an army, defining the scales to which they should conform in all the " sketches made by them; if this be done, it will not be necessary that a scale should " be drawn on each plan or sketch, but it will be sufficient merely to state upon it the " scale to which it has been drawn.

" For sketches of a position or battle-field, 6 *inches to a mile* ($\frac{1}{10560}$) will be found a " good scale. Plans drawn on this scale and shaded according to the scale of shade laid " down by the Council of Military Education, and approved by His Royal Highness " the Field-Marshal Commanding-in-Chief, may be reduced by photography to 3 or even " 2 inches to a mile, but not well smaller.

" For the purpose of reduction it is desirable that all printing and conventional signs " should be very clear, and in larger and heavier characters than would be employed if " the sketch were intended to be simply for the 6-inch scale.

" For sketches of a road or of a line of country executed on the march, 2 *inches to* " *a mile* is a good scale, but it is to be observed that the scale of shade laid down by " the Council for the 6-inch scale will not be applicable for this smaller scale, for which " the lines should be stronger and heavier.

" Plans or sketches on this scale may be reduced, if required, to a scale of 1 inch. " but for this purpose care must be taken that the printing and writing is very clear, and " rather heavier than it would otherwise be.

" III. It is desirable that every sketch should have a north point marked upon it, " and that notice should be given to the whole army of the scales determined as above, " with a view to conformity in all the sketches which are made by other officers than " those of the general Staff, from whom much valuable topographical information may " thus be obtained adapted for immediate incorporation with the general plans of the " country.

" All officers, but especally those—such as Engineer and Cavalry Officers—whose " duties frequently take them to a distance from the main road followed by the army, " should be encouraged to send sketches of the routes they follow, and the localities " they visit, with memoranda of their resources, which will always be useful in the " compilation of general maps and plans for the information of the Commanding " General.

" IV. All sketches and surveys should be carefully examined by an officer, who " should be a good draftsman; and where more than one sketch has been taken of the " same ground, he should be careful to collect upon one of them all the information " which is to be obtained from the others, or else compile a fresh sketch upon which all " reliable information should be shown.

" In many cases when sketches have been made of different tracts of country " adjacent to each other, they may be combined into one, the object being to cover each " sheet of paper with reliable information as completely as possible.

"V. Each sketch or plan, before being photographed, should have a scale of "distances clearly drawn upon or attached to it, which being photographed at the same "time as the plan, will form the scale upon which distances are to be measured on "the copy.

"VI. The paper to be used in sketching should, with a view to the clearness of the "photographs, be as white as possible, a blue rather than a yellow tinge being preferable.

"VII. Each photograph equipment consists of 18 packages, numbered 1 to 18, so "arranged as to be carried in wagons, or on seven mules, according to the following "Table:—

Mule Load. No.	Package. No.	Contents.	Weight of each package. lbs.
1	1	Camera.	100
	2	Chemicals.	95
			195
2	3	Dark tent.	50
	4	Framework of tent.	22
	5	Copying table.	82
			154
3	6	Printing frame.	90
	7	Glasses.	90
			180
4	8	Glasses.	95
	9	Glasses and paper.	85
			180
5	10	Chemicals.	95
	11	Chemicals.	95
			190
6	12	Chemicals.	95
	13	Chemicals.	95
			190
7	14	Portable still.	39
	15	Chemicals.	60
	16	Paper.	40
	17	Tools.	65
	18	Mountain frames.	17
			211

"These loads have been so arranged that packages Nos. 1 to 7 inclusive, may be "detached for an emergency from the remainder. They will suffice to take the negatives

" of two dozen plans and to strike off a total of 200 prints, after which they would " require to be replenished from the supply stores in the other packages.

" VIII. Each equipment provides for taking 12 dozen negative (9 by 11 inches), and " four dozen smaller negatives (8½ by 6½ inches), and the materials carried with it will " suffice to strike off 1,700 prints.

" IX. Means are also provided in the equipment for mounting a large proportion of " them (about 1,200) of the plans on canvas, to prevent them from being torn when in " use; but, of course, a short additional delay will occur if the plans have to be mounted."

The following is a detailed list of one photographic equipment, the second equipment being a duplicate of the first. The apparatus was supplied by Mr. Meagher, Southampton Row, High Holborn, and the chemicals by Messrs. Rouch, Strand:—

PHOTOGRAPHIC EQUIPMENT.

No. of Case.	External Dimensions of Case.			Weight.	Contents.	Value.			Cost, detailed description of equipment.
		ft.	ins.	lbs.		£	s.	d.	
1	Length	2	5½	100	Camera	34	12	0	
	Width	0	11						
	Depth	1	6½						
2	Length	2	4½	98	Chemicals	20	7	3	
	Width	1	2						
	Depth	1	6						
3	Length	2	8	60	Photographic tent	15	13	0	
	Width	1	4						
	Depth	0	8						
4	Length	3	11	33	Frame work of ditto				
	Width	0	8						
	Depth	0	5½						
5	Length	2	8	82	Copying table	6	15	0	
	Width	0	10½						
	Depth	1	6						
6	Length	2	3½	96	Printing frame	13	1	0	
	Width	1	1⅝						
	Depth	1	2⅝						
7	Length	2	2	90	Glasses and portrait lens	40	6	0	
	Width	1	1½						
	Depth	1	0						
8	Length	2	4	85	Glasses, &c.	10	9	2	
	Width	1	0						
	Depth	1	2½						
9	Length	2	3½	95	Glasses and frames	17	8	9	
	Width	1	0⅝						
	Depth	1	3						
10	Length	2	4½	95	Chemicals	26	8	6	
	Width	0	11						
	Depth	1	2½						
11	Length	2	4½	100	"	10	15	11	
	Width	0	11						
	Depth	1	3						

Photographic Equipment—*continued.*

No. of Case.	External Dimensions of Case.	Weight.	Contents.	Value.
	ft. ins.	lbs.		£ s. d.
12	Length .. 2 $3\frac{1}{2}$ Width .. 1 $0\frac{1}{2}$ Depth .. 1 $2\frac{1}{2}$	80	Chemicals	10 13 7
13	Length .. 2 $3\frac{3}{4}$ Width .. 1 $0\frac{1}{2}$ Depth .. 1 $2\frac{3}{4}$	85	„	6 13 7
14	Length .. 2 0 Width .. 1 2 Depth .. 0 9	39	Portable still	4 15 0
15	Length .. 2 0 Width .. 1 $1\frac{1}{2}$ Depth .. 0 $10\frac{1}{2}$	60	Miscellaneous	7 19 2
16	Length .. 1 $9\frac{1}{2}$ Width .. 1 2 Depth .. 0 $6\frac{1}{2}$	40	Prepared paper	5 18 6
17	Length .. 2 4 Width .. 0 12 Depth .. 0 12	65	Set of tools	5 16 10
18	Length .. 2 4 Width .. 0 12 Depth .. 0 12	17	Mounting frame	2 10 0
			Total Cost of one Equipment	234 13 7

No. 1 Box.

Gross weight, 100 lbs.

amera, &c.

	£ s. d.
11 by 9-inch sliding and folding camera, brass bound, complete	8 15 0
2 extra single backs	3 1 0
1 extra front	0 4 6
1 extra flange for triplet lens	0 4 0
1 folding cover for enlarging	2 10 0
1 12 by 10-inch Dallmeyer's triplet lens; rack and pinion adjustment, waterhouse diaphragms	10 5 0
1 leather case for ditto	0 13 6
Focussing cloth and cover for camera ..	0 10 6
1 folding tripod stand and lead	1 12 0
1 ebonite bath for 11 by 9-inch mahogany case	1 17 0
1 silver dipper for bath	0 16 6
2 16-oz. ebonite bottles in tray	0 8 0
1 ebonite funnel, and 1 glass funnel to rest	0 3 0
$\frac{5}{8}$-inch teak box to contain the above: length, 2 feet $5\frac{1}{2}$ inches; *width*, 11 inches; *depth*, 1 foot $6\frac{1}{2}$ inches; *outside dimensions* covered with painted canvas and bound with iron	3 12 0
Total	34 12 0

No. 2 Box.

Chemicals, &c.

For a few days work.

	£	s.	d.
Ebonite trays, 3 feet 13 inches by 11 inches and upwards	1	8	0
2 40-oz. ebonite bottles (bath)	0	13	4
2 40-oz. „ „ developing.. ..	0	13	4
2 15-oz. collodion, in tins	1	0	0
2 5-oz. iodizer, in tins	—		
1 15-oz. amber varnish	0	10	6
2 oz. cyanide of potassium	0	9	6
2 „ liquor ammoniæ	—		
2 „ acetic acid	—		
2 „ bottle, with litmus paper	—		
2 „ nitrate silver	0	8	0
12 drachms chloride of gold	4	4	0
2 portable water buckets	1	13	0
4 20-oz. ebonite bottles	0	16	0
2 10 „ „ „	0	5	2
2 square ebonite cups	0	2	3
6 ebonite developing cups	0	9	8
1 pneumatic plate and holder	0	4	6
Tin canister, 12 by 3½-inch diameter ..	0	1	6
Blotting paper	0	1	0
Packet of filter papers	0	2	6
2 chamois leathers	0	3	0
1 knife, 1 pair scissors	0	5	9
1 paper knife, 2 pairs forceps	0	3	10
3 cleaning cloths	0	3	0
3 silk handkerchiefs..	0	6	9
Packet of cotton wool	0	2	0
Scales and weights, 9-inch	1	7	6
1 spare 10 oz. glass bottle	0	0	6
Camel-hair brush	0	1	2
American clips, 3 dozen	0	2	6
Square and straight edge	0	12	9
Stand for drying negatives	0	5	6
¾-inch teak box to contain the above. Length, 2 feet 4½ inches; width, 1 foot 2 inches; depth, 1 foot 6 inches; covered with painted canvas, and bound with iron	3	12	0
Total..	20	7	3

No. 3 Box.

Dark Tent.

Gross weight, 60 lbs.

	£	s.	d.
Chatham pattern tent, with black calico cover, and extra white cover, with straps complete	12	0	0
Tent box, ½-inch teak, ebonite sink 16 by 14 inch by 3 inches deep, and pipe to ditto	1	15	0
1 folding mahogany table for mounting prints, &c., 2 feet 6 inches by 2 feet 6 inches. Dimensions of tent box: Length, 2 feet 8 inches; width, 1 foot 4 inches; depth, 8 inches	1	0	0
Total..	14	15	0

No. 4 Box.

Framework of Tent.

Gross weight, 33 lbs.

	£	s.	d.
Frames of well seasoned ash, with brass sockets, screws, and nuts, according to pattern in canvas bag (price included in 12*l.* above)	—		
1 pine packing case with hinged lid, to contain the same. Dimensions: Length, 3 feet 11 inches; width, 8 inches; depth, 5½ inches..	18	0	0
	18	0	0

No. 5 Box.

Copying Table.

Gross weight, 82 lbs.

	£	s.	d.
Copying table, extreme length 7 feet 6 inches *in three leaves, with* head-board for supporting drawings. Leaves bound together by ribbands and brass screws, extra long, supported upon 2 sets of trassels, and the leaves secured to them by screws countersunk into the leaves	15	0	
⅝-inch pine box to contain the above, covered with canvas and bound with iron. Dimensions: Length, 2 feet 8 inches; width, 12½ inches; depth, 1 foot 6 inches ..	2	0	0
Total..	6	15	0

No. 6 Box.

Printing Frames.

Gross weight, 96 lbs.

	£	s.	d.
8 mahogany printing frames for 9 by 11-inch plates, extra strong	6	8	0
60 yards of linen, in two pieces, for mounting prints	4	7	4
Box, ½-inch teak, covered with canvas and bound with iron. Dimensions: Length, 2 feet 3½ inches; width, 1 foot 1½ inch; depth, 1 foot 2½ inches	1	18	0
Total	13	11	4

No. 7 Box.

Glasses, &c.

Gross weight, 90 lbs.

	£	s.	d.
Ross's No. 3 A. portrait lens for 8½ by 6½ inches, for instantaneous views, with waterhouse diaphragms	26	15	0
Leather case for ditto	0	13	6
1 tin of salted paper, 4½ quires	1	5	0
2 plate boxes, each holding 2 dozen, 9 by 11 inches	1	16	4
60 yards linen in two packets	4	7	4
Spare focussing cloth	0	6	6
¾-inch teak box, covered with canvas and bound with iron, to contain the above. Dimensions: length, 2 feet 2 inches; width, 1 foot 1½ inches; depth 1 foot ..	2	12	0
Total	40	6	0

No. 8 Box.

Glasses, &c.

Gross weight, 85 lbs.

	£	s.	d.
5 ebonite trays to rest 12 by 10 inches and upwards, and to pack flush	2	1	0
2 4-oz. ebonite bottles for hydro. sulph. of ammonium	0	13	4
2 boxes of 9 by 11-inch plates, each holding 2 dozen	4	6	8
1 box of 2 dozen, 8½ by 6½ inches	1	3	2
¾-inch deal box covered with canvas and bound with iron to contain the above. Dimensions: Length, 2 feet 4 inches; width, 1 foot; depth, 1 foot 9¼ inches ..	2	5	0
Total	10	9	2

No. 9 Box.

Glasses, &c.

Gross weight, 95 lbs.

	£	s.	d.
2 plate boxes, 9 by 11 inches each, holding 2 dozen	4	16	8
1 box of 2 dozen, 8½ by 6½ inches	1	3	2
2 printing frames	1	12	0
4 ebonite funnels	0	10	3
¾-inch deal box to contain the above, covered with painted canvas and bound with iron. Dimensions: Length, 2 feet 3½ inches; width, 1 foot 0¾-inch; depth 1 foot 3 inches	2	12	0
Total	10	4	1

No. 10 Box.

Chemicals.

Gross weight, 95 lbs.

	£	s.	d.
8 15-oz. collodion in tin cases	4	0	0
3 tin cases of hypo. sulp. of soda, each holding 12 lbs.	0	9	0
2 tin cases of hydro. sulp. of ammonia, each 15 ozs.	0	3	0
22 2-oz. bottles, nitrate of silver	17	12	0
1 packet cotton wool	0	4	0
4 glass rods	0	2	0
4 10-oz. empty bottles	0	2	0
¾-inch teak box to contain the above, covered with painted canvas and bound with iron Dimensions; Length, 2 feet 4½ inches; width, 11 inches; depth, 1 foot 2½ inches	3	6	6
3 tiers for soda, and two for other chemicals	0	10	0
Total	26	8	6

No. 11 Box.

Chemicals.

Gross weight, 100 lbs.

	£	s.	d.
1 packet of cotton wool	0	4	0
1 10-oz. glass measure	0	2	6
1 4-oz. „ „	0	1	6
1 oz. nitric acid in wooden case	0	4	0
2 10-oz. glass bottles, empty	0	1	0
3 tins of hypo. sulph. of soda, each containing 12 lbs.	0	5	3
	0	9	0
9 15-oz. acetic acid	1	16	0
5 „ amber varnish	2	12	6
5 „ alcohol	0	7	8
2 „ absolute ether	0	9	4
1 30-oz. bichloride mercury	0	6	8
¾-inch teak box to contain the above, covered with canvas, and bound with iron. Dimensions: Length, 2 feet 4½ inches; width, 11 inches; depth, 1 foot 3 inches	3	6	0
Tins	0	10	6
Total	10	15	11

No. 12 Box.

Chemicals.

Gross weight, 80 lbs.

	£	s.	d.
1 packet of cotton wool	0	4	0
Scales and weights complete	1	17	0
Camels' hair brush	0	1	2
3 ebonite funnels	0	4	10
3 „ cups	0	2	3
8-oz. glass measure	0	2	0
4-oz. „ „	0	1	6
2 2-oz. „ „	0	2	6
1 brass spirit lamp	0	6	6
1 pneumatic plate holder	0	4	6
6 spare tops for „	0	6	0
Hardwick's chemistry	0	7	6
3 15-oz. meth. alcohol	0	16	6
4 15-oz. acetic acid	0	14	3
2 „ cyanide of potassium	0	8	4
1 30-oz. bichloride of mercury	0	6	8
1 hydro. sulp. of ammonia	0	1	7
Tins	0	10	0
¾-inch teak box to contain the above, covered with canvas, and bound with iron. Dimensions: Length, 2 feet 3½ inches; width, 1 foot 0½ inch; depth, 1 foot 2½ inches			
Total	10	3	7

No. 13 Box.

Chemicals.

Gross weight, 85 lbs.

	£	s.	d.
1 packet of cotton wool	0	4	0
10 16-oz. tins, acetate of soda	0	14	7
8 „ proto. sulp. of iron	0	6	8
2 „ tripoli powder	0	6	0
1 „ kaoline	0	1	0
8 15-oz. iodizers		—	
1 4-oz. liq. ammonia	0	1	10
4 2-oz. empty bottles	0	2	0
3 2-oz. iodide of potassium	0	11	6
1 2-oz. iodine	0	2	6
1 Argentometer	0	5	0
1 spare test tube for ditto	0	2	0
2 spare glass stoppers		—	
Tins	0	10	0
¾-inch teak box for the above, fitted with a tray; box covered with canvas and bound with iron. Dimensions: Length, 2 feet 3¾ inches; width, 1 foot ¼ inch: depth, 1 foot 2½ inches	3	6	6
Total	13	7	

No. 14 Box.

Portable Still.

Gross weight, 39 lbs.

	£	s.	d.
2 gallon oval still complete, with copper body to order	3	5	0
Box, ¾-inch teak, covered with canvas and bound with iron. Dimensions: Length, 2 feet; width, 1 foot 2 inches; depth, 9 inches	1	10	0
Total	4	15	0

No. 15 Box.

Chemicals.

Gross weight, 60 lbs.

	£	s.	d.
Packet cotton wool	0	2	0
Blotting paper, ½ ream	0	10	0
Packet of tamony	0	1	9
3 dozen assorted corks	0	1	0
2 packets tacks	0	0	6
7 packets of pins	0	1	0
9 pieces of tape	0	2	6
1 hammer	0	1	4
2 screw drivers	0	1	8
8 15-oz. pyro. gallic acid	1	14	0
2 memorandum books	0	3	6
4 chamois leathers	0	6	0
1 ebonite funnel	0	2	2
9 white cloths	0	9	0
2 silk handkerchiefs	0	4	6
Packet of filter paper	0	1	9
Tins	0	10	0
¾-inch deal box to contain the above, covered with canvas, and bound with iron. Dimensions: Length, 2 feet; Width, 1 foot 1¼ inches; depth, 10½ inches ..	3	6	6
Total	7	19	2

No. 16 Box.

Paper.

	£	s.	d.
3 tins of paper, 2 of salted and 1 of albumenized, each tin 4½ quires.	3	19	2
1 plate glass for squaring prints	0	9	6
¾-inch deal box to contain the above, covered with canvas, and bound with iron. Dimensions: Length, 1 foot 9¼ inches; width, 1 foot 2 inches; depth, 6½ inches	1	10	0
Total	5	18	8

No. 17 Box.

Tools.

Gross weight, 65 lbs.

	£	s.	d.
Smoothing plane	0	4	0
Dovetail saw	0	5	3
2 hammers	0	2	4
1 pair of pincers	0	1	3
1 pair of cutting pliers	0	2	0
1 pair of compasses	0	0	10
6 bradawls	0	1	3
1 oil stone	0	1	2
2 turn screws	0	3	4
1 oil can	0	1	0
1 wood scraper	0	1	0
1 scraper sharpener	0	1	0
2 files	0	3	3
2 three-cornered ditto	0	0	11
1 two-foot rule	0	2	9
5 firmer chisels	0	3	7
2 mortice chisels	0	3	0
1 small glue pot and brushes	0	2	0
1 hand pad of 12 bits	0	6	3
3 gimblets	0	1	0
1 packets of nails, 2 of tacks	0	2	9
3 packets of screws, 2 balls of twine ..	0	4	7
1 gauge, 1 spoke shave	0	2	7
3 pencils, 1 marking gauge	0	2	3
¾ rabbit plane, 1 square	0	4	0
2 lbs. glue, 2 lbs. marine glue	0	4	2
1 hand vice, 2 towels	0	6	0
¾-inch deal box fitted for the above, covered with canvas and bound with iron. Dimensions: Length, 2 feet 4 inches; width, 12 inches; depth, 12 inches	2	2	6
Total	5	16	0

No. 18 Box.

Mounting Frames.

Gross weight, 17 lbs.

	£	s.	d.
4 portable mahogany frames and strainers, and brass fixing screws and nuts for mounting linen	2	2	6
¾-inch pine case, hinged lid, to contain the above. Dimensions: Length, 2 feet 4 inches; width, 12 inches; depth. 12 inches	0	7	6
Total	2	10	0

Sergeant Harrold's memorandum on apparatus and chemicals.

The following memoranda were drawn up by Serjeant Harrold, the non-commissioned officer in charge of the apparatus, detailing the results:—

Folding and sliding camera, answered very well.

Cone to lengthen camera, for copying purposes, was very serviceable.

Dallmeyer's triplet lens, very good, either for views or copying, and answers very well for taking groups.

White cover for camera, very good for protecting the camera from the heat.

Folding tripod. There should have been a few extra studs for fixing legs to the iron triangle, as some of them got broken, and had no means of replacing them.

Ebonite bath, very good, with one exception—that is, when the cover is screwed down, the gutta-percha sticks fast to the ebonite, owing to the heat and pressure.

Silver dipper, good.

Ebonite bottles and funnels, good. Glass bottles for carrying bath solution would be better than ebonite, covered with wickerwork.

Developing cups (ebonite), good.

Collodion and iodizers should be stoppered with cork, with the glass stopper tied round the neck of bottle.

Chloroform and amber varnish, not good for the field, but very good for indoor work.

Portable water-bucket, good.

Pneumatic plate-holders, very good.

Scissors and forceps, camel hair brushes, square and straight-edge, and stand for drying negatives, very useful.

Dark tent, very good if supplied with gurp, as it is very easily upset.

Folding mahogany table for mounting prints, copying table, printing frames, and Ross's portrait lens, very good.

Salted and albumenized paper, good.

Plate-boxes would be much better to have a single plate in each groove.

Ebonite trays answer very well.

Nitric acid should be carefully stoppered; it destroyed several other articles in box.

Ether, very badly stoppered.

Empty glass bottles, very useful.

Argentometer, very good.

Two-gallon still, very serviceable.

Packet of tammony, and spare corks, very useful.

Flat-headed tacks, very useful for mounting linen on table.

Packet of pins, very useful.

Plate glass for squaring prints should have had a wooden case, and placed in bottom of box, as it got broken, being placed inside of the lid.

Carpenters' tools, very useful.

Portable mahogany frame for mounting plans was never used, being too small for the size of plans to be mounted.

The whole of the boxes composing the equipment were good and serviceable. Some of the locks were rather weak. Nos. 1 and 2 boxes were rather heavy for a long march.

Chemicals, all very good.

CHAPTER XXXV.

SCIENTIFIC DEPARTMENTS.

On the 16th September, 1867, the Secretary of State for India asked the Government of Bombay, by telegraph, if scientific men to accompany the Expedition were available in India, or should be sent from England.

In reply, the Governor of Bombay telegraphed that he would send a member of the Geological Survey from Bengal, and probably two other scientific men for botanical and meteorological observations. Gentlemen were also sent from England to represent some of the scientific societies. The following are the names of the gentlemen sent from India to England and attached to the Force:—

Names.	Profession.	From.
Mr. C. Markham, Assistant in the India Office	Geographer	Geographical Society, England.
Mr. R. R. Holmes, Assistant, British Museum	Archæologist	British Museum "
Mr. W. Jesse, Civil Engineer	Zoologist	Zoological Society "
Surgeon Cook, M.D., Bombay Army	Meteorologist	India Army Bombay.
Mr. W. T Blanford, Geological Survey of India	Geologist	Geological Survey Calcutta.

Sir R. Napier was informed that it was not the intention of Her Majesty's Government that these gentlemen should be placed in any official position, or invested with any departmental authority; but he was requested to give them every assistance in his power, and all information that the several public departments could afford, in furtherance of their researches. The above-named gentlemen were informed that, when within the limits of Abyssinian territory, their movements must be entirely subject to the control and sanction of the Commander-in-Chief.

The appointments made in England were submitted to the Treasury, who sanctioned liberal rates of pay and allowances for expenses.

Pay of Geographer.

The geographer, an assistant in the India Office, received his full ordinary salary, one moiety being paid by the Treasury, the other by the Indian Department. He was also indemnified against loss, by having a free passage to and from Abyssinia, and his maintenance, including necessary expenses, the cost of instruments, &c.

Pay of Archæologist.

The archæologist was to receive 2*l.* per diem, besides rations, lodgings, &c.,* and 1,000*l.* was inserted in the estimates to cover the cost of excavations or collections.

Pay of Zoologist.

The zoologist received a free outfit, amounting to 361*l.* 3*s.* 5*d.*, as well as free lodgings and rations, and 2*l.* per diem. The expenses of preparing and sending home zoological and archæological specimens were also allowed by the Government.

Meteorological instruments.

For the purpose of meteorological observation, the following equipment was sent:—Two mountain barometers, with empty tubes fixed; two spare tubes for each, filled; two spare tubes for each, empty; two wooden tripod cases, enclosing the barometers, and serving as stands; two copies of instructions for filling and fixing the spare tubes; one aneroid barometer, reading to 23 inches; two thermometers for solar radiation;

* For defraying incidental expenses when off the line of march.

two thermometers for terrestrial radiation; one Regnault's hygrometer, with aspirator jar. The meteorologist drew his pay as a Surgeon in the Indian Army and an allowance, making the aggregate of his monthly pay 100*l*. Pay of Meteorologist.

Mr. Blanford, the Geologist and Natural Historian, was allowed by the Government of India the pay to which he was entitled in India, 1,155 rupees per mensem and forage for two horses. He was allowed, as assistants, three Native taxidermists, one at 50 rupees, the other two at 40 rupees each per mensem and free rations. A sum of 277 rupees was also granted to him for stores, bows, powder and shot. Pay and establishment of Geologist.

GEOGRAPHER.

Mr. Clements Markham, Assistant Secretary of the Public Works Department in the India Office, and Secretary to the Royal Geographical Society, was appointed as Geographer to the Force in October 1867, and landed at Zula on the 12th December. He accompanied the head-quarters during the march and until the capture of Magdāla, making observations for latitude, variation, and elevation above the sea, and also keeping a meteorological journal, and recording observations on the physical characteristics of the country. Proceedings of the Geographer.

The results of his labours are comprised in three maps of the region traversed, and eight geographical memoirs, which have since been published in the journal of the Royal Geographical Society for 1868.

ARCHÆOLOGIST.

Mr. Richard R. Holmes, F.S.A., who was deputed by the trustees of the British Museum to accompany, on their behalf, the Expedition to Abyssinia, landed at Zula on the 24th January, 1868, and proceeded at once to join the head-quarters at Senafé. From this place he accompanied the force on its journey through the country, taking every opportunity of examining the villages and churches on the route. In only one or two instances, however, was he able to make any discovery of antiquarian interest. The remains of the libraries, which to a greater or less extent were in the possession of each religious community were found to be, without exception, modern, and of small interest. No trace of really ancient MSS. could, after careful search, be discovered, nor was there in any case any relic even of ecclesiastical furniture to which an early date could be assigned. The state of intestine warfare in which the country had for so long a time been plunged seemed to afford a solution for this dearth of material of historic interest. Proceedings of the Archæologist.

From the same cause it appeared that even the simplest arts had fallen into disuse. Only in two or three buildings in ruin could it be seen that squared masonry was employed in the architecture. A profusion of rude pictorial decoration covered the interior of the modern churches, and was interesting to the archæologist, as it exhibited in a fossilized form the traditionary types of the earliest Byzantine school of painting. Of the originals, however, of these designs, which must have been imported into the country in times coeval with the introduction of Christianity, no traces could be discovered.

For various reasons it appeared to Sir R. Napier inexpedient that any deviation from the line of march should be made by any one attached to the force. The main site of interest to the antiquary was therefore passed by. Axum, the ancient capital of the Abyssinian kingdom, was well known to contain many remarkable relics of early civilization. Travellers from Salt downwards had given accounts of its obelisks and inscriptions, and had circumstances on this occasion proved favourable, an attempt would have been made to carry on excavations at this interesting spot. A visit, however, of even a day's duration was found to be impracticable, and the only relic of the ancient kingdom which was procured was a coin of the seventh century found by a soldier near Lake Ashangi.

Mr. Holmes spent a considerable time on his return to Zula in inspecting the excavations carried out at the ruins of the ancient port of Adulis by Captain Goodfellow (see report at page 398), and in examining the country round, particularly in the hope of discovering the inscribed throne mentioned by Cosmos Indicopleustes as existing on the river bank near the ancient town, but he was unable to succeed, principally on account of the rapidity with which the re-embarkation of the force was conducted.

An account of the characteristics of the ancient churches, the remains of which were investigated, has been published in the proceedings of the Society of Antiquaries.

Zoologist.

Report of Zoologist.

The following is an extract from the report of Mr. W. Jesse, as published in the proceedings of the Zoological Society of London :—

"My late arrival on the scene of action having prevented me from accomplishing "anything like the work I wished to carry out, I eagerly seized upon an opportunity "which presented itself, after the close of the campaign, of supplying the deficiencies "thus occasioned.

"I heard from Mr. W. T. Blanford, Geologist to the Expedition, that he "Captain Mockler (political officer), and Mr. Münzinger (Her Britannic Majesty's Consul "at Massowah) contemplated an excursion into the Bogos country; and I therefore "wrote to the Consul begging his permission to make one of the party. This permission "I subsequently received, and under these auspices found means to fulfil my mission "more completely than I had anticipated.

"On the 27th of January, 1868, I left England, and on the 24th of February we cast "anchor in Annesley Bay. My arrangements on shore not being completed, I obtained "a boat and crew from the Captain and started with a party to the head of the bay. I "spent a couple of days here, examining the surrounding country and shooting. I pro- "cured specimens of the Naked-necked Francolin of the plains, one species of hornbill, "and a variety of other birds, the most important of which were eight specimens of the "*Dromus ardeola*. These latter I especially wished to bring home, both as skeletons and "in spirits. Unfortunately I could not carry out this intention, as, instead of returning "safely in about two hours' trip to the 'Great Victoria,' we were nearly wrecked on the "opposite shore; and the energies of our crew and selves were so severely tried by wind "and rain that we, with difficulty, and utterly exhausted, reached the fleet at the end of "24 hours. My specimens being spoiled, this was rather a discouraging commencement "of my duties. I may here remark that I did not again obtain specimens of this bird "until on my voyage home, at Suakin.

"On the 27th I landed at Zula, and reported myself to General Stewart, there await- "ing orders from the Commander-in-Chief. In a few days I received an intimation "from his Excellency that I should find ample scope for my researches in the neigh- "bourhood of Zula; it was, however, at that time impossible to prosecute them with any "result, on account of the country being utterly devastated of wood and grass, offering "but small opportunities for the zoologist. I obtained a few specimens, when an attack "of sickness put an end to my endeavours, and compelled me to go on board the "hospital ship. After some days I returned ashore; but in the course of a few hours I "had a relapse, which induced me to leave the plain and move up towards the highlands. "I was also disappointed in not meeting at Zula with the taxidermists Lieutenant R. "C. Bevan had given me reason to expect would be there; but before quitting the place

"I was fortunate enough to find a man who eventually proved of use to me in this "department.

"The country lying between the sea and the foot of the hills at Kumayli was of the "most barren description—to the seaward sandy, and nearer the hills broken ground, "bearing, at the period of which I speak, but few traces of vegetation beyond those of "low thorny mimosas and a stunted species of cypress. The plain is intersected by dry "watercourses, running from the hills towards the sea. The presence of salt in the soil "is to be detected from the sea even up to Kumayli. Along the seashore are belts of "mangroves, affording shelter for many species of waterfowl. About an hour's ride from "Zula towards the head of the bay are some hot springs, near a large grove of tamarisks. "It was at this place I found spoor and dung of elephants, three species of antelope, "and one of bustard. The tenants of these barren districts, as far as I could ascertain, "are elephants (during the wet season), three species of antelope, wart-hogs, a small "hare, one species of hyena (probably the spotted), one of jackal (probably *Canis anthus*), "a jungle cat (supposed to be identical with the Syrian cat, of which I obtained a female "and cubs), also a jerboa-like rodent. Scorpions are here numerous and large. For "further details I shall refer to my collections at a later date. The character of the "fauna of the plains is migratory, changing almost monthly from the hills to the plains, "and *vice versâ*.

"Proceeding up the passes, the only object worthy of special notice was the curious "rodent named by Mr. Blyth *Pectinator spekii*, the existence of which was made known "to me by Mr. Blanford, and of which I obtained specimens. I should have procured "more specimens had not my taxidermist fallen ill with fever, and my own health con- "tinued far from good.

"On arriving at Senafè I made that place my head-quarters, and health rapidly "improving, I set to work in the surrounding neighbourhood. Here, on one of my "excursions, a companion who had separated from me was robbed of one of my rifles, and "returned to camp stripped. Unfortunately, this happening out of my reach, I lost the "opportunity of procuring a skeleton of one of the inhabitants for our investigation in "England. From Senafè I made a short trip to Adigrat, adding somewhat to my "collection.

"The rapid and successful termination of the Abyssinian campaign brought my "labours to an unexpected close; but I continued working until Lord Napier's return to "Senafè obliged me to return.

"I here found the list of birds numerically increased. About Senafè and Rahagedi "the 'koodoo,' or 'aggazin' (*Strepsiceros kudu*), was found in small herds, and a fine "young buck came into my possession alive—a present to the Society from Dr. Knapp, "Surgeon to the 25th Bengal Native Infantry. Unfortunately, two consecutive attacks "of dysentery reduced the animal to such a state of weakness that it was impossible to "save it—a fact which I much regretted, as I believe at that time the Society did not "possess a specimen alive in their gardens. The 'klipp-springer' antelope existed in "these regions; and the 'Beni-e-Israel' antelope I found in the valleys at the back of "Senafè, as also the 'wart-hog.'

"Two species of 'ground squirrel,' one striated, the other not, and one species of "ichnuemon came under my notice up the passes.

"On the hills in the neighbourhood of Senafè I found another species of hare, about "equal in size to a three-quarter-grown English leveret, and of the same colour. A "small sandy strong-haired rat I also procured a specimen of, which was unavoidably "lost.

"On the return journey I spent a few days at Undul Wells, with a view of obtaining a more specific knowledge of the fauna of that elevation, having reason to believe it differed materially from that of the higher and lower zones. I did not, however, obtain much satisfactory information until my subsequent trip, at a later date, into Northern Abyssinia.

"I arrived with the rear guard at Zula, where, after having made some additions to my collection, I prepared seven cases to be sent to England. As I have before stated, I obtained permission from Her Britannic Majesty's Consul at Massowah to join him, Captain Mockler, and Mr. Blanford, in an expedition into the Bogos country, which, although already explored by Brehm and Heuglin, I thought worthy of attention. Had opportunity offered, I should, in accordance with my instructions and my own wishes, have visited the country towards Lake Assal. During the third week in June we were occupied in preparing for our proposed trip. We sent our baggage and provisions round to Massowah by buggalow, and our animals by land. We ourselves started on board the 'General Havelock' for Massowah, where we had to remain a few days arranging our affairs.

"On the 22nd June we left Massowah for the mainland, assembling our caravan at about four miles distance, at Makulla, and started the next morning with 38 camels, eight horses, and about 30 men. We halted at Sahati, *en route* for Ailat, and heard there of lions, but found no traces of them, so proceeded to Ailat the following day. Our camp here was situated on the banks of a wild nullah, watered by a hot spring at no great distance. This place is noted but too truly for its man-eating lions and panthers. It is a legend in the village 'that no man dies in his bed.' During one or two days I accompanied Captain Mockler (Mr. Blanford being lame) in pursuit of a lioness, tracks of which we had seen close to our tent, but with no success, Captain Mockler only obtaining one shot, which was without effect.

"On the 27th of June, after some premonitory symptoms, I received a sunstroke, which completely put an end to my researches. My friend Mr. Blanford was more fortunate, and laid the good foundation of his subsequent collection. On the 29th, at about 12 o'clock at night, I was awoke from my sick bed, along with my companions, by shrieks of the most fearful kind. It was pitch dark, and we rushed out of our tents with our arms in our hands, to find our followers in a state of most dire terror and confusion, filling the air with cries of 'the Lion, the Lion'; and then a dusky form was seen to bound away over the thorn fence and disappear in the darkness. After having in some degree quieted the fears of our people, we called the roll, and found that one of my gun-bearers, a Shankgalla of huge proportions, lay dead in the midst of us, his throat bearing but too terrible marks of the manner in which the poor fellow had perished. I may add that, only the night before, Mr. Blanford's butler had been severely wounded in the head by the claws of what we supposed to be a panther. These brutes had passed by our camels, horses, milch-goats, and fires without harming anything. In the morning, after a useless search for the brute of the preceding night, on which we naturally desired to wreak our vengeance, we buried the poor victim, covered him with a pile of stones, and left for Asoos. From here we started the same day, and halted at Kuserit.

"On the 31st we left Kuserit, and, halting at Anagully, arrived in the evening at Kanzal, where I managed to stroll out, but I was still very ill. I fired at two panthers without effect. At 6 P.M. on the 4th of July we started across the desert to Ain, on the river Lebka, which rises in the hills and flows across the plain to the sea. I stopped to look at a Bedouin village, consisting of about 100 mat huts. The inhabitants were a portion of nomad tribes which pasture their flocks, during the wet season,

"on the coast, moving up towards the highlands as the pasturage fails. We passed "through the ostrich country, but we did not see any. During the night, the moon "being up, we saw several herds of Antelopes.

"We arrived at Ain at about 10 o'clock. In the afternoon I went out, and suc- "ceeded in procuring some specimens. This place is very prettily situated, forming "quite an oasis in the desert. A bright stream runs through grass and high reed jungle, "bordered with tamarisk and other tress; a back ground of rugged barren hills, rising "tier above tier, enhances the beauty of the scene.

"On the 7th of July we left Ain for Mohaber; and when there I began to regain my "health. Between Ain and Mahabar we found spoor of elephants, evidently in a state of "migration from the lowlands to the highlands. At Mohaber I added considerably to "my collection, particularly by specimens of a small hawk, which I take to be the *Nisus "sphenurus* of Rüppell. Mr. Blanford obtained several. The night before our arrival "a native had been killed by a lion. The animal left his track by the water side, and it "was taken up by Mr. Blanford and Captain Mockler without effect. I took up the "track of a solitary elephant with a like result. At 5 o'clock A.M. the next day we con- "tinued our march, halting at Kelamet for lunch, and arrived at 6 P.M. at Kokai, or the "city of the lions. Between Kelamet and Kokai the scenery improved greatly, exchanging "rather stunted tamarins and barren mimosas for the baba tree, or *Adansonia*, the cactus- "like *Euphorbia*, and a dense jungle, with a strong undergrowth of rank grass and aloes.

"Here the climate was truly European, and indeed, at night intensely cold. The "fauna began to show the peculiarities which I had expected at Undul Wells, and in "which I was disappointed; the transition was so sudden that on the first day I pro- "cured three species of 'Roller,' a parrot, and several other birds.

"The next morning we found on inquiry that elephants were in the neighbourhood; "so, having supplied my taxirdermest with materials for his day's work, I joined Captain "Mockler and Mr. Blanford in an excursion in search of them.

"I remained two days longer in this neighbourhood collecting with success, and then "proceeded over the pass to Bejuk on the river Anseba. Here I had a good week, "securing many specimens I had hitherto failed to obtain. On the 14th of July we "went out in pursuit of a rhinoceros we had heard of the day before, and which "Mr. Blanford and I had the good fortune to shoot. The next morning I went out "with my attendants and *posse comitatus* of natives, to bring in the skeleton, and on "arriving at the place I witnessed a scene precisely similar to that described by Sir "Samuel Baker as taking place over the carcass of a hippopotamus; women, old and "young, the former hideous, scratching, screaming, and fighting over the entrails, pulling "furiously at these or at one another's hair, it mattered not which so that possession of "the prey was secured; the men jabbering like jackals, fighting with sticks and knives, "one and all knee-deep in filth and blood; so that between them, in about four hours, "the skeleton was utterly bared of meat and skin, leaving not an atom for the vultures.

"On the 18th we had the first earnest of the rainy season, which was ushered in by "a terrific storm of rain and hail, some of the hailstones being as large as small walnuts. "The Anseba, an affluent of the Barka, from a dry bed with an occasional waterhole "became a splendid river, varying from 50 to 100 yards in width, and flowing between "banks of dense jungle and fine forest trees. The spoor of elephants, black rhinoceros "and lions were plentiful along the banks, so much so as to give the appearance of a "place frequented by giant rabbits. The valley here varied from 15 to 20 miles in width, "the jungle and forest limiting itself to about a couple of miles on each side. The "remainder of the ground was stony and barren, rising gradually towards the hills, and

"intersected by numerous nullahs running into the Anseba. Here we came in for a "glimpse, on two occasions, of another species of Antelope, slightly larger than the 'Beni-"e-Israel.' Unfortunately I had but a momentary view of it, and never succeeded in "obtaining a specimen. On the 19th we left Bejuk for Waliko, seeing on the road "plenty of spoor of elephants and rhinoceros; from the dung of the latter I collected a "few coleoptera. While at Waliko, finding a great scarcity of birds, I followed up more "closely the tracks of the rhinoceros, passing through very dense jungle that is never "penetrated by sun or air, by means of their paths, which are from two to three feet "broad, and formed like galleries in a mine, about four feet high—and so entering their "dens, which are very curious, having the appearance of immense arbours; they vary "in size from 13 to 20 feet square, and have in some cases a smaller retreat adjoining.

"On the 24th, Mr. Blanford and I went out birding, and came upon fresh tracks of "two lions; they had followed elephants' spoor for over two miles. The herd con-"sisted of three old ones and a young one. The next day we left for Maraguay, where "Captain Mockler shot a doe koodoo, and I procured a few birds, one species of "'*Indicator*.' Mr. Blanford obtained a new kingfisher, of which I also secured a spe-"cimen the next day. I also shot a pair of fine ground-hornbills (*Bucorax abyssinicus*), "which I prepared as skeletons. The rains having set in, and the term of our excursion "drawing to a close, we left Maraguay on the 31st of July on our return journey. "When I arrived at Waliko, to which place Captain Mockler had preceded us, I found "that he had been charged by a herd of some 20 elephants, and had been forced to make "good his escape into a tree, after hard running, and having left a bullet in the head of "a large bull. At a later date I found myself in the same disagreeable predicament, "and under a like disagreable necessity. At Waliko I found two species of crested "cuckoo and the English cuckoo. I also obtained a bateleur eagle, two species of "tortoise, and a small squirrel. I must here state that Waliko is not, as represent in the "map, on the right side of the river, but on the left, running down stream. From here "we crossed over to Gabena Weld Gonfallon, or the River Plain, where Mr. Blanford "and Captain Mockler killed a rhinoceros. We returned by the old route to Kokai and "Kelamet, and then branched off to Rairo; here we stopped two days collecting. On "the 15th of August we moved on again to Mombarharattby, where we killed a lioness, "one out of four, the others running away; from this place to Ain (where we re-entered "our former route), which we quitted on the 17th of August for Amba and Mai Wallet. "Mr. Blanford and I stayed in Amba from the 19th to the 21st, trying to obtain "specimens of the "*Oryx beisa*." I unfortunately did not even see one; Mr. Blanford "procured four specimens. We went from Amba to Massowah, which I left on the 27th "for England.

List of collections by Zoologist.

"I append a list of my collections, full information relative to which will appear at a "later date:

Skins of mammals, about	.. .. ..	24	
Skull of an aboriginal	.. .. ..	1	
Skull of African elephant	.. .. ..	1	
Skeleton of rhinoceros	.. .. ..	1	
Heads of antelope	.. ..	3	
Skeletons of other mammals, about	..	8	
Skins of birds, about	.. .. ..	750	
Birds and mammals in spirit, about	..	20	
Reptiles in spirit, about	.. .. ..	6	
Tortoises and lizards about	.. .. ..	6	
Fish, about	.. ..	30	
Crustacea, about	.. ..	50	
Lepidoptera, about	.. ..	150	
Coleoptera, about	.. ..	200	
Total number of specimens, about		.. 1,250	

The following living specimens were also forwarded to the Zoological Society from Zula.

Young wild cats*	2
Jerboa-like land rats..	2
Guinea-fowls	2

METEOROLOGIST.

Surgeon Cook, M.D., of the Bombay Army, was the officer selected by the Bombay Government as meteorologist. He left Bombay on the 5th January, 1868, and arrived at Zula on the 20th idem, accompanied by a European assistant who had previously been attached to the Observatory at Belgaum. He arrived at Kumayli on the 14th February, at Upper Suru on the 21st idem, and ascended the Senafè Pass on the 17th of the following month, establishing an observatory there.

Proceedings of Meteorologist.

Having remained a month at Senafè, he made a rapid journey southward as far as Ashangi.

The following is Dr. Cook's report showing the result of his labours:—

"*Report on the Meteorology of Abyssinia.*

Outline of the physical characters of the country.

"Intervening between the shore of Annesley Bay and the highlands of Abyssinia is "a tract of sandy plain, at first but a few feet above high-water level, but rising as it "extends inwards towards the base of the chain of mountains to a height of about 450 "feet at Kumayli.

"This tract varies in width from a mere strip towards the bottom of the bay, to 8 "or 10 miles opposite *Mulkutto or Zula*, the site chosen for the base of operations of "the Force.

Differing in every material respect from Abyssinia proper, a notice of this country "would hardly be required were it not that it was traversed by the whole of the force "which entered the country, and formed the residence at the stations of Zula and "Kumayli of a considerable portion of that force for the whole period of the occupation.

"This plain, composed of exceedingly soft and loose sand, sparsely covered with a "thin sprinkling of calicornias and acacias, is broken by one or two low hills of trap rock, "and a spur from the Gedem Hills which lie further north.

"At Kumayli the great mountain mass rises abruptly from the plain, and, range "behind range, reaches a height of some 10,000 feet in the mountain peaks, which tower "above the last few miles of the pass before the table-land is reached at Senafè.

"The series of ranges, cross cut by the gorges of the pass, are composed of meta-"morphic rocks, capped by trap and sandstone, near the summit.

"From Senafè, southward to Mai Wahiz, a distance of 50 miles, the country main-"tains a height, with some few exceptions, exceeding 8,000 feet, and is composed of trap "and sandstone rocks; thence, as far south as Antalo, a distance of 60 miles, the level "sinks some 1,000 or 1,200 feet, and a series of limestone strata is met with; succeeded "by trap formations, closely resembling those of Western India, attaining a maximum "elevation in the Talanta and Wadela plateaus of some 10,500 feet, cross cut by the "river gorges of the Jedda and Bashilo to a depth of 3,000 or 4,000 feet.

"The valleys and hill sides around Senafè are well clothed with forest, chiefly of the "juniper, the trachitic strata forming by decomposition a light friable soil; southward to "Adigrat and Mai Wahiz, as far as the sandstone extends, the soil forms good arable "land, and broad plains with low scrub are frequent, thence for the next 60 miles of the "limestone series the country is dry, barren, and stony, and thinly sprinkled with acacia.

* These were the only specimens forwarded by Mr. Jesse that reached the society alive. They were the young of *Felis maniculata*, Rüppell.

"At Antalo, from the decomposition of the nodular basalt, a true 'black soil' like "the cotton soil of the Dekkan is met with; further south rise the mountains of Wajerat, "densely covered with juniper forests, and having a rich friable soil from the decomposing "trap, followed by the broad, elevated, and bleak plains of the Wadela and Talanta, and "the succession of flat-topped saddle-backed trap ranges, capped with basalt like those "of the plains of India.

Physical character influences climate.

"As may be supposed, the climate of the different tracts of country varies with, and "is influenced by their physical characteristics, but that of the highlands has the same "distinctive features throughout the provinces of Tigrè, Amhara, and Shoa; but differing "from that of the plains in every respect; differing, indeed, as much as though separa- "ted by wide parallels of latitude or broad expanse of ocean, the one resembling some "of the worst portions of the Desert of Sind, the other enjoying an European tem- "perature.

Difference in the seasons.

"The variation of the seasons of the two countries (separated by difference of "elevation only) is remarkable. The seasons of the highlands resemble, in their "arrangement, those of the Dekkan in India, having a well-marked cold or wintry "period, a hot or summer, and a monsoon or rainy season; while those of the lowlands "can only be divided, like those of Scind, into a hot and a cold season. The heavy "rainfall of the highlands, bringing with it coolness and verdure, does not extend into "the Habesh, where, at the same period of the year, the heat and drought are most "marked and intolerable, and where, if any rain falls at all, it occurs during the cold- "weather months.

Cold season of the plains.

"Through the kindness of some Medical Officers* who were present at the com- "mencement of the campaign, I have been able to glean some data of the months of "October and November: these, with the registers of portions of the months of January "and February, will probably give a fair indication of the character of the climate "during the cold season of the plains. During the early part of October, at Zula, the "mean daily maximum was 98·8°, and the minimum 71·6°, with an extreme maximum of "100°, and minimum of 70°. The mean daily range was thus 27°, and the extreme range "30°. The sky was clear; a slight dew was observed at night; the breeze northerly; "the barometer at noon gave a mean of 30·03.†

"For the remainder of the month the register was kept at Hadoda, about 10 miles "inland. Here the mean maximum temperature was 96·7°, and mean minimum 65°; "the greatest maximum 99°, and least minimum 61°, giving a mean daily range of 31·7°, "and an extreme range of 38°. The wind was northerly; sky clear, with a slight dew "at night; the mean barometrical pressure at noon was 29·51.

"At sea, on board ship, the mean maximum was registered as 89·6°, and the mean "minimum as 85·9°, giving a range only of 3·7°!

"During November the mean daily maximum was 96·4°, and the extreme maximum "105°, while the mean minimum at night was 67·4°, the lowest point reached being 66°. "The diurnal range was thus 29°. The air was dry, the mean difference between the dry "and wet bulb thermometers being 13°. No rain fell during the month; the sky was "generally clear, and the wind northerly. At sea, during this time, the mean maximum "was 83·5°, and the mean minimum 81·3°, giving a difference only of 2·2°.

"In January the heat had moderated, and the temperature was more equable. The "mean maximum was 90°, mean minimum 69·0°, extreme maximum 96°, extreme

* Surgeon Lumsdaine, Assistant-Surgeon Martin, and Dr. Griffin of the P. and O. steamer "Noona."

† Approximate, by aneroid barometer.

FRAGMENTS OF CARVED MARBLE & ALABASTER
FOUND AMONG THE RUINS OF
ADÛLIS.

Lith. at the TOPL DEPOT of the WAR OFFICE
COLONEL JAMES R.E. DIRECTOR

" minimum 66°, mean diurnal range 21°, and extreme range 30°. The maximum tem-
" perature in the sun's rays was 142°, the approximate mean temperature of the month
" 79·5°. The mean barometrical pressure, corrected and reduced, was 29·919; the
" direction of the wind was north-east and east; the mean amount of ozone was 3 by
" day and 4 by night.

" The reading for the month of February were as follows:—Mean maximum 85°,
" mean minimum 71·5°, extreme maximum 93°, extreme minimum 67°, mean diurnal
" range 13·5°, extreme range 24°, mean temperature of the month 78·2°, mean baro-
" metrical pressure 29·907. For the first half of the month the general direction of the
" wind was northerly, for the remainder westerly and variable. About 1 inch of rain
" fell.

" The mean temperature of the cold-weather season may perhaps be set down at
" 81°. The nights and early mornings were cool, sometimes comparatively cold, a light
" breeze from the land (*i.e.* from the mountainous region) generally prevailing. This
" died away soon after sunrise, and the air became still and close; and frequently the
" temperature at 10 A.M. had almost reached its maximum for the day. About 11 A.M.
" the sea-breeze commenced, with pretty much uniformity, attaining its full force about
" noon, and continuing to blow steadily until 4 or 5 P.M., when it died away. Its good
" effect was very marked, and on days when it was comparatively absent the heat became
" oppressive.

" Dust storms occasionally occurred, and usually mitigated the heat and relieved
" the oppressive feeling which the peculiar electrical condition of the air excited until its
" gradual culmination in the storm.

" The barometrical readings were remarkably regular. The two maxima occurred
" at about 9·30 A.M. and P.M., and the minima at 3·30. The mean difference between
" these readings was but slightly above 1-10th, while the greatest difference recorded
" did not exceed 3½-10ths. The rain which fell in February, aided by the cloudy
" weather which generally prevailed through the month, did very much to mitigate the
" temperature and render it more agreeable, while it layed the chronic dust-storm which
" usually prevailed over camp the greater portion of the day, and revived the face of
" nature generally. The dust-covered salicornias of the plain grew green again, the
" acacias threw out fresh shoots, and a thin green herbage made its appearance on the
" loose sandy soil.

" About the latter part of the month of March the hot season commenced, and the Hot season
" heat grew in intensity until, in the beginning of the month of June, the mean daily of the plains.
" maximum reached 105·6°, and the mean minimum 84·8°, the temperature never falling
" below 83° during day or night, and the highest was 108·5°, under the most favourable
" circumstances of shade and air circulation. Indeed the air was so heated that a
" stronger gust than usual served only to raise the thermometer a degree or two. The
" difference between the readings of the dry and wet bulb thermometers varied from
" 20° to 24° during the day, and 10° to 13° at night, the air being very dry.

" The mean barometrical pressure at this time was 29·676, corrected and reduced
" to 32°.

" The land and sea breezes were well marked; the former fortunately blew with still
" greater force than during the cold weather, or the effects of this extreme heat would
" have been more disastrous.

" The climate of the 50 miles of the pass varies of course greatly with the difference Climate of
" of elevation, but it assimilates more nearly with that of the lowlands. The rainfall of the pass.
" the cold-weather months extends up as far as Suru or Undel, *i.e.*, to an elevation of

"about 3,500 feet, while that of the monsoon of the highlands reaches generally to "about the same extent downwards, but its effects in the shape of floods and torrents "are felt throughout the length of the pass.

"The temperature at Suru (about 2,500 feet above the sea), during the ascent of "the Army in February and first half of March, was moderated by the effects of the rain "on the mountains, and of the mists which hung incessantly about their summits. The "nights were much cooler than those of the plains, and the range of temperature greater. "On clear days, however, when no clouds intervened, it became evident that the confined "air of the pass could become heated equally with that of the plains, though at so con- "siderable an elevation. Thus the mean maximum temperature reached 88°, with an "extreme maximum of 98°; the mean minimum temperature was 65°, and the lowest "61·5°, giving an extreme range of 36·5°. The heat consequently was at this time but "little inferior to that of the coast, and the extremes greater. The ordinary rule, there- "fore, of the decrease of 1° of temperature for every 300 feet of elevation does not hold "good under circumstances like these.

"At the end of May or commencement of June, when I descended the pass, the "heat at this spot was intense; the maximum temperature registered was 105° in the "shade, while before sunrise, at 4 A.M., the thermometer stood at 80°.

"At this season, at Undul (some 1,300 feet higher above sea-level), the maximum "heat registered was 93°, and the minimum 71·5°. At Rahagedi, about 6,500 feet, the "temperature had decreased to a maximum of 86°, and a minimum of 58·5°; the rule of "decrease of temperature with height here applying with greater accuracy.

Climate of the highlands.

"I have mentioned the natural division of the seasons of the highlands into a cold, "a hot, and a rainy season. The cold season may be said to extend from October to "February, the hot from the beginning of March to the middle of June, and the wet or "monsoon period from this to the end of September.

Cold season.

"The only month of the cold season of which I have been able to collect reliable "data is December, which month may perhaps be accepted as a fair mean of this season, "though colder weather may have occurred during other months of this period.

December.

"The mean maximum for this month was 73·0°, and the mean minimum 43°, giving "an estimated mean temperature of 58·3°. The extreme maximum was 77°, and the "lowest temperature 39°, showing a mean diurnal range of 30·6°, and an extreme range "of 38°. The mean temperature of evaporation was 54°. Dew was formed at night, the "sky being usually clear, and the wind southerly or south-easterly. The days were very "pleasant, but the nights cold under canvas, at times exceedingly so; and in exposed "and damp situations, as on Goose Plain, near Senafè, in the following month (January) "ice formed inside the tents. Mr. Blanford informed me that hoar-frost occurred at "Tekunda as late as the 28th February. Dr. Kirk states that at Ankober, in Shoa, "lat. 9° 35′, E. long. 39° 54′, at an elevation of 8,200 (?) feet, 'the nights are chilly in "'the colder months; though snow is unknown, a thin sheet of ice is often found on "'the more sheltered pools, whilst a white hoar-frost frequently greets the eye at day- "'break.'

"The mean temperature at Ankober, for the winter months, was 52·6°, the extreme "maximum 65°, and extreme minimum 41°.

"At Magdāla, in lat. 11° 30′, the mean temperature* of the cold-weather months "was 56·2°; the mean maximum ranged from 70° to 72°; the mean minimum from "33° to 48°. In the year 1867 there were 12 rainy days in the month of January; in

* Deduced from Meteorological Register made by Dr. Blanc.

" the following year, on two occasions only rain fell in this month. In February 1867 no " rain fell; in the same month, in the following year, rain fell at night on nine occasions. " At Ankober, in 1842, the rainfall was more equally distributed through these months " of the cold-weather season.

" The registration for the hot-weather months commenced on the 19th March. It " was made under very favourable circumstances, the instruments being hung in a shed " constructed to receive them, admitting a perfectly free circulation of air, but excluding " all reflected heat: watertight, but not liable to be heated by the sun's rays. I found " that the registrations made in the small canvas tents supplied to the Force were most " unreliable and incorrect, a thermometer hung in one of them often reading 15° above " that of the air in shade. Hot season. Registration how made.

" The instruments were read every two hours, from 5·30 A.M. to 9·30 P.M.; and on " the 1st, 11th, and 21st of the month hourly, from 3·30 A.M. to 9·30 P.M. During the " months of April and May, a barometrical reading was also taken daily at 3·30 A.M. The " readings were made by a mercurial mountain barometer by Newman, carefully com- " pared with the standard at Bombay.

" The mean maximum temperature, for the portion of the month of March under " review, was 81°, the mean minimum 52·5°, the greatest maximum reading 84°, and the " lowest reading 48°. The mean diurnal range of temperature was thus 28·5°, and the " extreme range 36°; the estimated mean temperature 66·7°. The air was very dry " through the day, the difference between the dry and wet bulb thermometer usually " being from 15° to 20° at noon, and on one or two occasions reaching 25°.* To this " dryness of the atmosphere was due the intensity of the sun's rays, often very marked, " the solar radiation thermometer reading on several occasions 138°. The mean average " relative humidity, for the 12 hours from 9·30 A.M. to 9·30 P.M., was 53·1°. The air " became moister towards evening very rapidly, the difference between the dry and wet " thermometers often falling 12°, and on one occasion 20° between the hours of half-past " three and half-past five o'clock. The average difference at night, for this month, " was 4°. Month of March.

" The wind was light at night, usually towards morning from the west (showing a " slight inclination to the arrangement of land and sea breezes), east or south-east " during the day, strong through the middle of the day, but dying away towards evening, " when it frequently veered round to north-east, and brought up masses of vapour and " fog from seaward.

" The nights were generally clear and starlit; clouds, usually cirro-cumuli, gathered " about 9 or 10 A.M., reached a maximum amount in the afternoon, and passed away at " evening.

" Rain fell on three occasions during the afternoons, accompanied with thunder " and lightning, and on one occasion with hail.

" The indications of ozone were always present; the mean amount by day was 3, " with double that quantity at night.

" The barometrical readings were very regular. The mean maximum, at 9·30 A.M. " (which exceeded slightly the maximum at night), was 22·591; the mean minimum " 22·514 (corrected and reduced to 32°); while the mean daily range was thus ·077, the " greatest range observed during the month was only ·233.

" The readings of the thermometer, during the month of April, varied to a remark- " ably small extent from those of March. The mean maximum was 81·5°, the mean Month of April.

* The greatest difference yet observed in Great Britain is 18°.

"minimum 53·2°, the greatest maximum 86°, and the least minimum 49°; the mean "diurnal range was 28·3°, and the extreme range for the month 37·5°; the estimated "mean temperature 67·3°, or half a degree only above that of the previous month. The "air was somewhat drier, the greatest difference between the dry and wet bulb ther- "mometers observed being 28·5°, giving an estimated relative humidity of ·159; the "mean daily average for the month, from 9·30 A.M. to 9·30 P.M., being ·487. On two "occasions, the extreme maximum temperature in the sun's rays reached 141°. The "quantity of ozone registered daily gave a mean of 3 by day and 6 by night as before.

"Rain fell on five days; about one inch was measured. There were thunderstorms "on the 2nd, 14th, 23rd, and 27th; and distant thunder, with lightning, was observed "on fifteen occasions, chiefly occurring in the afternoon or towards evening. Banks "of fog on the north-east horizon were observed on the 5th, 6th, 10th, and 11th. "The peculiar electrical condition of the air, tending to produce dust-storms and dust- "columns, with violent and irregular gusts of wind, prevailed on the 10th, 11th, "and 22nd.

"The wind was something more variable, especially during the first half of the "month, when a westerly current was frequently noticed during the middle of the day. "The general direction of the wind was easterly, rising, as before, in the morning, "attaining its maximum force during the heat of the day, and fading away at evening. "The nights were clear, and dew was observed on nine occasions.

"The mean reading of the barometer, at the morning maximum, was 22·594, at "the afternoon minimum 22·540, the maximum reading of the month 22·641, and the "lowest reading 22·493. The mean daily variation was only ·054, and the extreme "range ·148, being even less than that of last month.

Month of May.

"The month of May had a slightly lower general temperature, and the daily "variation and range of temperature were less. The mean maximum was 77°, the mean "minimum 54·5°; the greatest maximum 83·5°, the lowest reading 49°; the mean "diurnal range 22·5°, and extreme range during the month 34·5°. The estimated "mean temperature was 65·7°.

"The air was less dry, the mean difference at 9·30 A.M. being 12·8°, at 3·30 P.M. "12·6°, and at 9·30 P.M. 5°; the maximum difference was 25°, the daily mean relative "humidity ·581. The average maximum temperature in the sun's rays was 125·3°, and "the greatest observed temperature 139°. The quantity of ozone registered was in excess "of that of the previous month, viz., 5· by day and 7· by night.

"The weather was unusually cloudy and showery throughout the month, but "especially during its latter part, when the skies were frequently overcast. Rain fell on "14 days; a total of 1·86 inches was measured.

"Thunderstorms occurred on the 2nd, 3rd, 4th, 5th, 6th, 11th, 15th, and 26th, "generally towards evening, and distant thunder and lightning were observed on ten "other occasions. Atmospheric dust was noted on the 13th, 14th, and 24th, and fogs "at night on the 8th and 9th. The wind blew more steadily from the east with fewer "variations, the mean estimated force at 9·30 A.M. was 2·1, at 3·30 P.M. 3·0, and at "9·30 P.M. 1·8; the maximum force registered was 7.

"The barometrical readings were still more uniform, and showed less diurnal and "extreme range than before. The morning maximum (mean average) was 22·613, and "afternoon minimum 22·561, evening maximum 22·607, and morning minimum 22·568. "The greatest maximum 22·654, and lowest pressure 22·523, the mean diurnal variation "·052, and extreme range ·131.

Equable character of climate.

"The equable character of the climate of these months, and their general similitude,

"are very striking, their means taken together differing to hardly any extent from the "means of either. Taken as a whole, the mean diurnal range of temperature is 26·4, "the extreme range 36·, and the estimated mean temperature of the hot season 66·5.

Mean annual temperature of the highlands.

"From the results obtained by Dr. Blanc at Magdāla, I have calculated the mean "temperature of this season at that place to be 65·5°, and from the register kept at "Ankober, in 1842, by Dr. Kirk, it is 58·5°; the decrease of temperature thus evidenced "towards the south being due probably to greater elevation and a damper atmosphere.

"We may perhaps take the mean temperature of December at Senafè as an approxi- "mate mean for the cold season, viz., 58°. At Magdāla the mean was 56·2°, and at "Ankober 52·6°. The mean of the rainy season at the latter place was 56·3°, or 2·2° "below the means of the hot season; at Magdāla 60°, or 5·5° below that of the hot. At "Senafè the decrease may perhaps fairly be calculated about the same; this would give "a mean temperature of 61° for the rainy season.

"These results would give an approximate mean annual temperature of 61·8° for the "province of Tigré, 60·5 for Amhara, and 55·8° for that of Shoa, or a mean annual "temperature for the highlands of Abyssinia of 59·3°, closely approximating to that of "the South of France. But the equable character of the climate of the highlands, when "we contrast its seasons, becomes more remarkable than its low annual temperature, "while the mean summer heat of the South of France rises considerably above, and its "mean winter temperature falls much below that of the highlands of Abyssinia, the "difference between the mean temperature of the summer and of the winter months of "the latter country is only 6° in Shoa, and 8·5° in Tigré (approximately).

Variation of atmospheric pressure.

"The evenness of the barometrical readings is also very marked, especially so when "the latitude of the country is taken into consideration. The mean daily fluctuation "for the three months amounted only to ·061°, while at Calcutta, which is 7° of latitude "further north, it is nearly double that amount, and at Bombay, lat. 18·58°, the mean "daily variation is ·102.

"The extreme range of the barometer between its highest and lowest readings "amounted only to ·233 in March, ·148 in April, and ·131 in May. It is to be regretted "that observations with the mercurial barometer could not have been extended over a "longer period in this country. Dr. Kirk was unable to make any at Ankober, three "barometers received by him for the purpose being broken on the journey.

Barometric pressure at sea level.

"From observations made on board Her Majesty's ship "Octavia" in Annesley "Bay, kindly forwarded to me by Captain Campbell, I have deduced the following "means of the barometrical readings (corrected and reduced to 32°) for the months of "January, February, March, and parts of April and May.

"The mean maximum pressure for the month of January was 30·006, and the "minimum 29·895, the greatest maximum 30·117, and the lowest reading 29·761, giving "a mean diurnal fluctuation of ·111 and an extreme range of ·356.

"The mean maximum for February was 29·994, the mean minimum 29·901; "extreme maximum 30·152, extreme minimum 29·722, giving a mean diurnal range of "·093, and an extreme monthly range of ·430.

"The mean maximum for March was 29·905, and the mean minimum 29·805, the "highest reading 30·078, and the lowest during the month 29·619, giving a mean "diurnal range of ·102, and an extreme range of ·459.

"The mean maximum for April was 29·897, the mean minimum 29·798, the highest "reading 30·039, and the lowest 29·630, showing a mean diurnal fluctuation of ·099, and "an extreme range of ·409.

"In May (from 21st to 31st inclusive) the mean maximum pressure was 29·846, "and the mean minimum 29·770, giving a range of ·076.

Monsoon, or rainy season.

"Perhaps the most striking characteristic of the climate is the occurrence of a well-"marked monsoon, or rainy season, in a climate otherwise strictly temperate. Rainy "seasons, such as the well-known south-west monsoon of India, occur also in other parts "of the world, as in Guinea, Central America, and elsewhere, but these occur in tropical "climates with very high temperatures.

"The rainy season is of importance, not only in equalizing the temperature, increasing "the fertility, and keeping up the water supply of the country, but, as Sir S. Baker has so "graphically shown, it plays a most important part in the annual overflow of the Nile.

Extent of Abyssinian monsoon.

"The extent of country over which this monsoon falls includes the whole of "Abyssinia proper, and a large tract of the country lying to the westward, roughly "from the 8th to the 16th degree of north latitude, and in breadth from the 40th to the "35th or 34th meridian of east longitude.

Variation in quantity of rainfall.

"The amount of rainfall is greatest to the southward and westward, and decreases "towards the east and north. I do not think that in the region around Senafé there is "a very heavy fall. The evidences of a copious monsoon (such as are met with on the "western ghâts of India) are altogether wanting. The houses and churches are flat-"roofed, and constructed of materials not suited to withstand excessive wet. The trees "are bare of moss and ferns, and there are no large collections of standing water. It "is only as we journey southward that these indications of a moderate rainfall are lost. "At Adigrat, the houses are still principally flat-roofed, though here and there a circular "thatched roof is seen. These rapidly increase in proportion as we go south, and, after "passing Antalo, none but circular, high, conical roofs are met with. In the moun-"tainous region of Wojerat, about 13° N. latitude, the forest is dense, and the trees are "thickly hung with moss and drooping festoons of ferns, two of which, at least, are "identical in species with those found in the forests around Mahableshwur, on the "mountains of Western India, where the rainfall averages 250 inches during the "monsoon. South of this parallel of latitude are the lakes of Ashangi, Haik, and "Dembea, &c., and here also are those wonderful river systems whose streams flow "through valleys 3,000 feet below the level of the surrounding country.

"Dr. Kirk estimated the rainfall at Ankober to be about 100 inches, judging from "his knowledge of the fall during the monsoon in the Bombay Presidency, with which "he was familiar; but I believe that this would be considerably under the mark, if "taken as an average even for the south-east portion of the country, and, from Sir S. "Baker's description of the deluges of rain which occurred in the western portion of "the rainy district, the fall in that direction probably greatly exceeds that amount.

Duration and dates.

"The rainy season proper commences as a rule about the middle of June, occasionally "a little earlier, and ceases about the middle of September. By the 20th June, according "to Sir S. Baker, the floods make their appearance in the Blue Nile and Athara, and "disappear about the end of September. These dates, however, vary somewhat, and, as "in India, the rains occasionally commence earlier or later. Thus, at Ankobar in the "year 1842, there were only eight rainy days in June; at Magdâla, in 1866, there were "13 rainy days in May, while in the following year there were only three wet days in May "and six in June. At Senafé rain fell on 15 days in May, and 1·860 inch were gauged.

Causes of monsoon.

"The wind currents during this season are easterly. Earlier in the year there is a "southerly tendency, and later on they blow more from the north, thus pointing toward "the tract of country in the centre of the continent, whose vast deserts being heated as "the sun passes northward, become the foci of the indrawn masses of atmosphere, and

ABSTRACT OF METEOROLOGICAL OBSERVATIONS.

OBSERVER, H. COOK, ESQ., M.D., SURGEON, BOMBAY ARMY.

From Daily Observations.

Station.	1868. Month.	Dates of Observation (inclusive). From	To	Hours of Observation.	Barometer. Mean Height of the Barometer, Corrected, and Reduced to the Temperature of 32 Degrees at 9·30 A.M.	3·30 P.M.	9·30 P.M.	Maximum Height. (Observed)	Date and Hour.	Minimum Height. (Observed)	Date and Hour.	Extreme Range of Barometer. (Observed).	Hygrometer. Dry Bulb Thermometer. Mean Temperature at 9·30 A.M.	3·30 P.M.	9·30 P.M.	Wet Bulb Thermometer. Mean Temperature at 9·30 A.M.	3·30 P.M.	9·30 P.M.	Maximum Difference between Dry and Wet Bulb Thermometer.	Date and Hour.	Humidity. Corresponding to the Means of the Dry and Wet Bulb Thermometers at 9·30 A.M.	3·30 P.M.	9·30 P.M.	At the time of the Maximum Difference between Dry and Wet Bulb Thermometers.	Self-Registering Thermometers. Mean Maximum Temperature in Sun's Rays.	Mean Minimum Temperature on the Grass.	Mean Maximum Temperature of the Air.	Mean Minimum Temperature of the Air.	Approximate Mean Temperature of the Air.	Maximum Temperature in Sun's Rays.	Date.	Minimum Temperature on Grass.	Date.	Maximum Temperature of the Air.	Date.	Minimum Temperature of the Air.	Date.	Extreme Range of Temperature.	Wind. General Direction.	Mean Force at 9·30 A.M.	3·30 P.M.	9·30 P.M.	Maximum Force Registered.	Rain. Total Fall.	Number of Days on which Rain fell.	Maximum Quantity Registered in 24 Hours.	Date.	Ozone. Mean Amount during Day.	Night.	Cloud. Mean Amount at 9·30 A.M.	3·30 P.M.	9·30 P.M.
					Inches.	Inches.	Inches.	Inches.		Inches.		Inches.	Degrees.	Degrees.	Degrees.	Degrees.	Degrees.	Degrees.	Degrees.						Degrees.	Degrees.	Degrees.	Degrees.	Degrees.	Degrees.		Degrees.		Degrees.		Degrees.		Degrees.						Inches.		Inches.								
Zula	January .	23rd	31st	5·30, 7·30, 9·30, and 11·30 A.M., and 1·30, 3·30, 5·30, 7·30, and 9·30 P.M.	29·084	29·855	29·939	30·042	A.M. 9·30 24th	29·741	P.M. 5·30 30th	0·301	83·3	87·5	78·4	74·7	74·8	75·3 *	23·9	P.M. 1·30 26th	0·668	0·550	0·784	0·311	128·8	..	90·0	69·1	79·5	142·6	26th	..	..	95·0	26th	66·0	24th	30·0	N.E. and E.	0·7	2·7	0·4	5	0·000	0	0·000	..	3	4	3	2	1
	February	1st	13th	Ditto	30·004	29·888	29·969	30·095	A.M. 9·30 4th	27·746	P.M. 3·30 6th	0·249	78·4	81·9	77·2	74·1	74·9	73·6	13·5	P.M. 7·30 6th	0·816	0·720	0·844	0·531	107·5	..	84·6	71·8	78·2	134·0	7th	..	..	91·0	11th	67·0	3rd	24·0	N.W. and N.E.	1·5	3·7	1·6	9	0·310	8	0·120	8th	5	5	2	2	3
Kumayli	February	15th	20th	Ditto	29·924	29·814	29·888	29·992	A.M. 11·30 15th	29·708	P.M. 3·30 18th	0·284	80·0	80·5	74·6	74·3	74·8	72·6	12·5	P.M. 1·30 18th	0·765	0·767	0·908	0·571	108·2	..	85·5	71·2	78·3	136·0	18th	..	..	93·0	18th	69·0	19th	24·0	W.	0·7	0·8	0·7	2	0·540	5	0·370	16th	6	5	8	9	9
Suru (in the Pass) ..	February	22nd	29th	Ditto	27·592	27·504	27·596	27·690	A.M. 9·30 29th	27·437	P.M. 3·30 25th	0·253	69·7	70·1	65·1	66·1	67·0	64·2	13·0	A.M. 11·30 24th	0·833	0·856	0·953	0·546	106·4	..	77·3	62·9	69·6	149·0	24th	..	..	86·5	24th	59·0	28th	27·5	W. and N.E.	1·4	1·7	1·2	4	0·370	6	0·190	27th	7	7	8	10	9
	March ..	1st	12th	Ditto	27·559	27·462	27·549	27·613	P.M. 9·30 10th	27·407	P.M. 3·30 5th	0·205	79·6	80·9	70·6	70·6	72·1	67·8	19·5	A.M. 11·30 6th	0·659	0·663	0·872	0·429	121·5	..	88·2	65·2	76·7	139·0	7th	..	..	93·0	6th	61·5	10th	36·5	W.N.E. and E.	0·8	1·2	0·9	4	0·180	3	0·120	9th	3	4	6	6	6
Undul Wells (in the Pass)	March ..	14th	15th	Ditto	26·110	26·029	26·093	26·112	A.M. 9·30 15th	26·015	P.M. 3·30 15th	0·097	75·0	83·5	75·5	59·3	64·7	62·0	22·5	A.M. 11·30 14th	0·422	0·375	0·482	0·277	140·0	..	84·5	60·5	72·4	149·0	14th	..	..	84·5	14th	60·0	15th	24·5	E.	0·5	1·5	1·0	6	0·000	0	0·000	..	1	1	0	0	0
Senafé (on the table land)	March ..	19th	31st	Ditto	22·591	22·514	22·570	22·673	A.M. 9·30 29th	22·440	P.M. 3·30 24th	0·223	69·7	74·0	59·7	55·7	56·9	54·9	25·0	P.M. 1·30 24th	0·449	0·381	0·764	0·224	130·0	50·1*	81·0	52·5	66·7	138·0	29th	47·0	24th	84·0	21st	48·0	22nd	26·0	E. and S.E.	2·5	3·6	2·8	8	1·020	3	1·000	29th	3	6	2	6	2
	April ..	1st	30th	Ditto	22·594	22·540	22·587	22·641	P.M. 9·30 26th	22·493	P.M. 3·30 12th	0·148	72·6	74·9	69·9	55·6	57·3	54·3	28·5	P.M. 12·30 21st	0·465	0·373	0·684	0·159	123·7	49·9	53·2	81·5	67·3	141·5	14th	49·0	23rd	86·5	23rd	49·0	12th	37·5	E.	1·6	3·5	1·8	6	0·950	5	0·750	23rd	3	6	2	6	3
	May ..	1st	27th	Ditto	22·613	22·561	22·607	22·654	P.M. 9·30 18th	22·523	P.M. 3·30 8th	0·131	69·6	70·3	59·1	56·8	57·7	54·1	25·0	P.M. 1·30 3rd	0·490	0·502	0·751	0·232	125·8	52·1	77·0	54·5	65·7	139·0	5th	47·5	8th	83·5	2nd	49·0	8th	34·5	E.	2·1	3·0	1·8	7	1·860	14	0·760	15th	5	7	5	8	6

REMARKS.

ZULA.

Latitude 15° 17′ 55″ N. Longitude 39° 43′ 30″ E.

Height above the Sea 3 feet.

January 23rd to 31st.

Morning and evening cool and agreeable. Sultry at mid-day.
Sea breeze generally commenced about 11 A.M.
Close, hazy, and sultry, with dust, on 30th.

February 1st to 13th.

Generally overcast, but cool and agreeable, with frequent light rain. Gale of wind, with dust-storm on afternoon of the 3rd, ending with rain.
Strong sea breeze on the 8th, 11th, and 12th, from 1 to 4 P.M.
No observations taken on the 14th. Instruments packed for march to Kumayli.

KUMAYLI.

Latitude 15° 12′ N. Longitude 39° 34′ E.

Height above Sea about 450 feet.

February 15th to 20th.

Observations commenced at 11·30 A.M. on 15th.
Overcast, but cool and agreeable, with frequent rain.
Thunderstorm, with light rain on the evening of the 19th, continuing till midnight.
No observations taken on the 21st. On the march to Suru.

SURU.

(In the Pass.)

Latitude 15° 6′ N. Longitude 39° 32′ E.

Height above the Sea, about 2,600 feet.

February 22nd to 29th.

NOTE.—Suru is a narrow defile surrounded on all sides by mountains from 1,200 to 1,500 feet in height.

Generally overcast, cool, and damp, with frequent light rain.
Heavy dew on nights of 23rd and 24th.

March 1st to 12th.

Weather variable. Morning and evening cool and agreeable. Hot and sultry at noon.
Overcast, cool and damp on 10th, 11th, and 12th. No observation on 13th. Marched to Undul Wells.

UNDUL WELLS.

(In the Pass.)

Latitude 14° 56′ N. Longitude 39° 32′ E.

Height above the Sea, about 3,950 feet.

March 14th and 15th.

Night and morning cold, with clear sky.
Hot and sultry during the day, with gusts of wind and dust-columns.
Observations discontinued at 5·30 P.M. on 15th. Instruments packed for march to Senafé.
No observations taken on the 16th, 17th, and 18th.

SENAFÉ.

(On the Tableland.)

Latitude 14° 20′ N. Longitude 39° 27′ E. Height above the Sea about 8,000 feet.

March 19th to 31st.

* Minimum temperature on the grass first registered on 24th.
Night generally cold. Also morning and evening cool. Warm during the day, and frequently cloudy.
Cool and agreeable on 22nd and 31st. Thunderstorms on the afternoons of the 19th, 21st, 26th, and 29th (heavy on 29th). Distant thunder also on the 30th.

April 1st to 30th.

Observations taken hourly on the 1st, 11th, and 21st.
Weather generally cool and agreeable. Frequently cloudy during the day, and clearer at night and morning.
Thunderstorms on the afternoon of the 2nd (heavy), 9th (distant), 14th, 23rd, and 27th. Distant thunder also on the 1st, 16th, 24th, and 28th.

May 1st to 27th.

Observations taken hourly on the 1st, 11th, and 21st.
Month for the most part cool and agreeable.
Thunderstorms very frequent.
Hailstorm on the 6th.

N.B.—The Barometric Observations at Zula and Kumayli are corrected for altitude above the level of the sea.

"the main-spring of the whole phenomena. The vast column of air thus drawn in "over the country comes from the region of the Arabian Sea and Indian Ocean, over "which at this season of the year the south-west monsoon, laden with moisture from the "equatorial sea, is blowing. Thus Abyssinia, and more indirectly but not less consecu- "tively, Egypt itself participates in the benefit of those climatic phenomena, which "originated by the ascending heated air-currents of Central Asia bring fertility and "verdure to the plains of Hindostan.

"Much as the monsoon of Abyssinia resembles that of Western India, it differs "in one particular. A large proportion of the rain-fall of the south-west monsoon is "precipitated on the conkan, or seaboard of Western India, where the fall amounts to "about 80 inches; on the line of the Western Ghâts it reaches 250 inches, but decreases "rapidly as it passes eastward, and at Poona is only 24 inches. The reverse of the "case is observed in Abyssinia, no fall whatever takes place on the seaboard, and the "quantity which is precipitated on the eastern flanks of the mountain ranges is less than "that which falls more to westward, while it extends with slowly diminishing force away "towards the vast plains which lie to the west of the highlands of Abyssinia. Difference between the monsoon of India and Abyssinia.

"The monsoon of Abyssinia is termed by the people 'the rains of the Covenant.' "There is, especially towards the southward a second, less-marked, rainy season, or "rather period of the year in which rain is expected to fall, called by the inhabitants "'the rains of Bounty.' Rains of Bounty.

"This period comprehends the latter half of February, March, and part of April. The "quantity and the period of the rain-fall alike seem, however, very uncertain. At "Ankobar, in 1842, there were seven rainy days in February, four only in March, and "14 in April, while at Magdâla, in 1867, rain fell on one day only in February, on 10 "in March, and on two in April. At Senafè there were one or two showers in February, "three days in which rain fell in March, and four in April, whereas there were 14 "rainy days in May and a considerable fall of rain occurred. This fall was still "heavier towards the south, and in the mountainous region of Wojerat, between Antalo "and Ashangi exceedingly heavy storms occurred, during which several inches of rain "must have fallen. It would seem, therefore, that these 'rains of Bounty' are "(especially toward the north-east of the highlands) very precarious, both as to quantity "and period, and likely in the region around Senafè to be deferred so late as to imme- "diately precede or run into the more exact and determined period of the 'rains of "the Covenant.'"

GEOLOGIST.

Mr. Blanford was permitted by the Government of India to accompany the Force as geologist and zoologist. He left Bombay on the 4th December, 1867, landed at Zula on the 22nd, and left for the interior on the 12th February, 1868. In the meantime he explored the immediate vicinity of Zula, visited Hadoda and Wiah, examined the Kumayli Pass, and, in company with Dr. Cook, went to the southern extremity of Annesley Bay. Having examined into the geology of Senafè, and paid a visit to Tekonda, the Koheito Plateau, and Halai, he started for the front on the 17th March and reached Magdâla on the 10th April, having performed the journey in 21 days, which allowed little time for a careful examination of the country. Proceedings of Geologist.

Mr. Blanford left Magdâla on the 16th April. He remained seven days near the Lake of Ashangi, and was back at Senafè on the 25th May. Previously to leaving Africa he paid a visit to the hot springs of Ailat, and to the country of the Bogos, above

Massowah, accompanied by Mr. Jesse and Mr. Münzinger. He finally left the coast of Africa on the 29th August for Bombay.

Scientific results.

The scientific results of Mr. Blanford's journey are of much value. He has determined the true succession of the principal rocks constituting the Abyssinian highlands, defining their characters with greater exactness than had been done previously. He has, moreover, collected (with the assistance of officers who took an interest in his labours), 2,019 specimens of vertebrate animals representing 390 species, and about 3,500 specimens of mollusca and articulata, representing 500 species.

The results of Mr. Blanford's researches are laid down in an illustrated work published by Messrs. Macmillan, and styled "Observations on the Geology and Zoology of Abyssinia."

List of Zoological specimens collected by Geologist.

The following is the list of the specimens of Vertebrata collected by Mr. Blanford:—

	No. of Specimens of each Species
SUB-KINGDOM—VERTEBRATA.*	
I. Class—Mammalia.	
Order—Quadrumana.	
1. Cynocephalus hamadryas, *L.* ..	3
* 1 skin with skull.	
* 2 skulls.	
2. Cercopithecus griseoviridis, *Desm.*...	4
* 1 complete skin.	
† 1 flat skin.	
* 1 skeleton.	
† 1 skull.	
Order—Cheiroptera.	
40. Vespertilio, *sp.*	1
† 1 specimen in spirit.	
Order—Carnivora.	
3. Felis manicnlata? *Rüpp.*	1
† 1 complete skin.	
4. Felis, *sp.*	1
† 1 complete skin.	
5. Genetta tigrina? *Gray*	1
1 flat skin.	
9. Herpestes gracilis? *Rüpp.*	1
1 complete skin.	
10. Herpestes mutgigella? *Rüpp., var*	7
5 complete skins.	
1 flat skin (imperfect).	
1 skeleton.	
8. Hyæna crocuta, *L.*	1
* 1 complete skin.	
6. Canis mesomelas, *L.*	1
* 1 complete skin.	
7. Canis, *sp.*	3
3 complete skins (* 1 † 2).	
Order—Pachydermata.	
22. Phacochœrus æliani, *Rüpp.* ..	3
* 1 complete skin.	
* 1 head (skin and skull).	
* 1 skull.	
23. Rhinoceros Keitloa? *Smith.* ..	1
† 1 head (skin and skull).	
24. Hyrax, *n. sp.?*	1
† 1 complete skin.	
25. H. abyssinicus? *Ehr.*	20
15 complete skins.	
2 flat skins (imperfect).	
2 skeletons.	
1 skull.	

* In the Mammalia when a complete skin is specified a skin with skull and leg-bones is meant. A flat skin is without skull or leg-bones.

The numbers preceding each correspond with similar numbers on the labels affixed to the specimens.

In the birds in general the sexes are only noted where they differ;—(*) indicates male; (†) female.

	No. of Specimens of each Species.
25a. Do. *var. a.*? H. Brucier, *Gray*; or H. alpini, *Gray* .. .. 6 complete skins. 1 flat skin (imperfect). 1 skeleton.	8
25b. Do. *var. b.* .. .. 1 complete skin.	1
26. Hyrax, *sp. ? nov.* .. .. .. 2 complete skins.	2
Order—Proboscidea.	
27. Elephas africanus, *Cuv., var.* .. † 1 skull.	1
Order—Ruminantia.	
11. Gazella soemmerringii, *Rüpp.* .. * 1 complete skin. † 1 flat skin without head or feet. 2 skulls (* 1 1 †). † 1 frontlet.	5
12. G. dorcas? *h* .. .. .. † 1 complete skin. 2 heads (skin and skull) * 1 † 1. 2 skulls without lower jaw. (one imperfect) * 1 † 1. * 1 horns of young buck.	6
13. G. (perhaps G. Arabica, *Ehr.*) .. * 1 skull.	1
14. Oryx Beisa, *Rüpp.* .. .. .. † 2 complete skins. † 1 skeleton.	3
15. Oreotragus saltatrix .. .. † 1 complete skin. * 1 head.	2
16. Scopophorus montanus, *Rüpp.* .. * 1 complete skin.	1
17. Cephalophus Madoqua, *Rüpp.* .. * 2 skins with skulls, but without leg-bones.	2
18. C. hemprichii, *Ehr.* .. .. .. 3 complete skins (*1 † 2). † 1 flat skin. * 1 skeleton.	5

	No. of Specimens of each Species.
18a. Do. rufus, *var.* .. .. .. 8 complete skins.	8
19. Strepsiceros Kudu .. .. .. * 1 skin with skull; no leg-bones. † 1 flat skin.	2
20. Capra hircus, *h. var.*,(domestic) .. * 1 complete skin of large-horned variety.	1
21. Ovis steatopygus, *Pallas* (domestic) * 1 skull. 1 fœtus in spirit.	2
Order—Rodentia.	
28. Lepus abyssinicus, *Ehr.* .. .. 5 complete skins.	5
29. L. ægyptius? *Geoffroy* .. .. 4 complete skins.	4
30. Sciurus annulatus, *F. Cuv.* .. 3 complete skins.	3
31. Xerus rutilans, *Rüpp.* .. .. 4 complete skins.	4
32. X. leuco-umbrinus, *Rüpp.* .. .. 12 complete skins. 2 flat skins, imperfect. 2 skeletons.	16
33. Pectinator spekii, *Blyth* .. .. 6 complete skins. 1 " in spirit 6 specimens in spirit.	13
34. Bathyergus (? Rhizomes) splendens, *Rüpp.* .. .. .. 2 complete skins. 1 specimen in spirit. 1 skeleton.	4
35. Euryotis, *sp.* .. .. 4 complete skins.	4
36. Mus, *sp.* .. .. 2 specimens in spirit.	2
37. Mus, *sp.* .. .. 2 specimens in spirit.	2

	No. of Specimens of each Species.
38. Mus, *sp.*	1
1 specimen in spirit.	
39. Gerbillus, *sp.*	9
3 complete skins.	
6 specimens in spirit.	
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RESUMÉ.

Orders.	Species.	Specimens.
Quadrumana	2	7
Cheiroptera	1	1
Carnivora	8	16
Pachydermata	5	36
Proboscidea	1	1
Ruminantia	11	38
Rodentia	12	67
	40	166

II. CLASS—AVES.

A. Skins.

ORDER—RAPTORES.

Family—Vulturidæ.

3. Gyps Rüppelli, *Pr. P. v. Wart.* ..	1
2. Neophron percnopterus, *L.* ..	4
4. N. Pileatus, Burchell	2
Family—Falconidæ.	
5. Falco, jugger? *Gray*	1 *
6. F.	5
	4 * 1 †
7. F.	1 †
8. F.	1 †
9. Tinnunculus alaudarius, *Bris* ..	5
	2 * 3 †
10. T. Cenchris, *Naum*	4
	2 * 2 †
11. Melierax polyzonus, *Rüpp.*	5
12. Accipiter unduliventer? *Rüpp.* ..	1
13. Micronisus niger? *Vieill.*	2
14. M. gubar?, *Le Vaill.*	2
15. M. Sphenurus, *Rüpp.* (adult) ..	2
15A. M. do., in younger plumage ..	7
16. Aquila nævioides, *Cuv.*	5
17. Helotarsus ecaudatus, *Daud.* ..	2
18. Buteo augur, *Rüpp.*	7
18A. Do. in immature plumage ..	2
19. Gypogeranus serpentarius, *L.* ..	1
1. Gypaëtos meridionalis, *Keyset Blas* .	2
20. Milvus ater, *L.*	5
21. M. ægyptius, *Gmel.*	1
22. Circus æruginosus, *L.*	2
23. Circus cinereaceus, *Montague* ..	3
	1 *
24. C. Swainsoni, *A. Smith*	1 *
Family—Strigidæ.	
25. Bubo (perhaps B. cinerascens, *Geurin*)	3
26. B. maculosus, *Vieill.*	1
27. Athene meridionalis? *Risso* ..	4
28. Scops vulgaris, *Cuv.*	2
ORDER—SCANSORES.	
Family—Psittacidæ.	
29. Pœocephalus meyeri, *Cretzschmar* ..	10
30. Agapornis taraniæ, *Stanley* ..	11
	7 * 4 †
31. Palæornis cubicularis, *Hasselquist* ..	2
ORDER—INSESSORES.	
Family—Bucconidæ.	
32. Pogonorhynchus saltii, *Stanley* ..	2
33. P. Undatus, *Rüpp. var*	6
34. P. melanocephalus, *Rüpp.*	3
35. Barbatula chrysocoma, *Temm.*	4
36. Trachyphonus margaritatus, *Rüpp.* ..	9
Family—Picidæ.	
37. Picus (Campethera) æthiopicus, *Hemprich*	11
	5 * 5 † 1 ?
37A. P. do. young (?-P. chrysurus, *Swain.*)	1 *
38. P. (Dendrobates) hemprichii, *Ehr.* ..	2
	1 * 1 †
Family—Indicatoridæ.	
39. Indicator (probably I. archipelagicus, *Temm*)	1 *
40. I. minor, *Le Vaill*	1 *
Family—Cuculidæ.	
41. Cuculus canorus, *L.*	1
42. Oxylophus (probably O. afer, *Leach*)	3
43. O. melanoleucos? *gm.*	1
44. Chrysococcyx, *sp.*	2
45. C. *sp.*	1
46. Centropus monachus, *Rüpp.* ..	2
47. C. superciliosus, *Rüpp.*	7

	No. of Specimens of each Species.
Family—Musophagidæ.	
48. Turacus leucotis, *Rüpp.*	11
49. Chizcrhis zoucera, *Rüpp.*	6
Family—Colidæ.	
50. Colius leucotis, *Rüpp.*	4
51. C. senegalensis, *L.*	5
C. „ (young)	2
Family—Caprimulgidæ.	
52. Caprimulgus, *sp.*	2
	1 * 1 †
53. C. *sp.*	3
	1 * 2 †
54. C. *sp.* (wing only)	1 †
Family—Cypselidæ.	
55. Cypselus equatorialis, *Mull.* ..	2
56. C. apus, *L. var.*	4
57. C. affinis, *Licht.*	6
Family—Hirundinidæ.	
58. Hirundo melanocrissus, *Rüpp.* ..	1
59. H. striolata, *Rüpp.*	1
60. H. riocourii, *Sav.*	4
61. H. (probably H. filicaudata, *Lath.*).	2
	* & †
62. H. rufula? *Temm.*	2
63. H. *sp.*	1
64. Hirundo rustica? *L. var.*	2
65. H. tristoptera, *Rüpp.*	1
66. Chelidon urbica, *L.*	1
68. Cotyle (probably C. torquata, *L.*) ..	3
69. C. rupestris, *Scopoli*	2
67. C. riparia, *L.*	1
Family—Coraciadæ.	
70. Coracias abyssinica, *L.*	12
71. C. (probably C. levaillantii, *Temm.*)	11
72. Eurystomus (probably *E.* afer, *Cuv.*)	13
Family—Halcyonidæ.	
73. Halcyon rufiventer, *Swains* ..	6
74. *H. sp.*	2
75. H. cærulea, *Kuhl.*	7
76. Alcedo? senegalensis? *L.*	3
77. A. semitorquata, *Swains*	1
78. Ceryle, *sp.*	1
Family—Meropidæ.	
79. Merops lamarckii, *Cuv.*	9
80. M. apiaster, *L.*	3
81. M. ægyptius? *Forsk.*	2
82. M. cæruleocephalus, *Lath.* ..	2
83. M. cuvieri, *Licht.*	9
84. M. (probably M. laliesnayii, *Guer.*)	7
85. M. (probably M. erythropterus, *Gmel.*)	1
Family—Bucerotidæ.	
86. Tockus limbatus, *Rüpp.*	4
87. T. flavirostris, *Rüpp.*	4
88. T. erythrorhynchus, *Lath.*	7
89. T. nasutus? *Lath.*	10
	7 * 3 †
90. Tmetercros abyssinicus, *Gmel.* ..	2
Family—Upupidæ.	
91. Upupa epops, *L.*	4
91A. U. epops *var.* senegalensis, *Sw.* ..	2
Family—Promeropidæ.	
92. Promerops erythrorhynchus? *Ouv.*	10
	7 * 2 † 1?
93. P. senegalensis? *Vieill.*	1 †
94. P. cyanomelas? *Cuv.*	2
Family—Nectariniidæ.	
95. Nectarinia abyssinica? *Ehr.* ..	11
	10 * 1 †
95A. N. do. young (? N. gularis, *Rüpp.*)	2
96. N. affinis, *Rüpp*	9
	7 * 2 †
97. N. cruentata, *Rüpp.*	5
	4* 1 †
98. N. *sp.*	1 *
99. N. taeazze, *Stanley*	14
	11 * 3 †
100. N. metallica, *Licht.*	10
	7 * 3 †
101. N. pulchella, *L.*	9
	8 * 1 †
Family—Muscicapidæ.	
102. Tchitrea ferreti, *Guerin*	8
	2 adult*
103. Muscicapa chocolatina? *Rüpp.* ..	6
104. M. (probably M. torquata, *L.*) ..	7
	4 * 3 †
Family—Laniadæ.	
105. Lanis excubitor, *L.*	3
105A. L. (? do. young)	2
106. L. rufus, *Brisson*	2
107. L. cristatus, *L.*	7
108. L. collaris, *Lath.*	13
109. L. *sp.*	4
110. Telephorus æthiopicus, *Rüpp.* ..	11
111. Dryoscopus Cubla, *Lath.*	4
112. Nilaus Brubru, *Lath.*	5
	2 * 3 †

	No. of Specimens of each Species.
113. Laniarius (? L. erythropterus, *Shaw*)	6
114. L. erucntatus, *Ehr.*	6
115. Dicrurus lugubris, *Ehr.*	4 * 2 † 6
Family—Turdidæ.	
116. Turdus olivaceus, *L.*	4
117. T. simensis, *Rüpp.*	10
118. Petrocincta cyanea, *L.*	3
119. P. saxatilis, *Lath.*	2 * 1 † 1
120. Bessonornis semirufa, *Rüpp.* ..	4
121. Pycnonotus arsinoë? *Licht.* ..	9
122. Oriolus moloxita, *Buff.*	2
Family—Timaylidæ.	
123. Crateropus leucopygius, *Rüpp.* ..	9
124. C. leucocephalus, *Rüpp.*	3
125. Chattarbœa, *sp.*	1
126. Cisticola lugubris, *Rüpp.*	3
127. C. erythrogenis, *Rüpp.*	1
128. C. *sp.*	1
129. C. (? C. flaveola, *Hengl.*)	1
130. Drymoica pulchella, *Rüpp.* ..	1
131. D. rufifrons, *Rüpp.*	1
132. D. mistacea, *Rüpp.*	1
133. D. *sp.* (near D. gracilis, *Rüpp.*) ..	5
134. D. *sp.*	1
Family—Sylviadæ.	
135. Oligura micrura, *Rüpp.*	4
136. Phylloscopus natterori, *Temm.* ..	6
137. P. umbravirens, *Rüpp.*	1
138. P. *sp.*	2
139. Orbotomus ? *sp.*	11
139A. O. (probably female of above)	1
162. Sylvia melanocephalus, *Lath.* ..	1
140. S. *sp.*	1
141. Aëdon ? *sp.*	2
145. Aëdon galactodes, *Temm.*	10
142. Acrocephalus, *sp.*	6
143. Ruticilla, *sp.*	7
144. R. phœnicura, *L.*	4 * 3 † 3
146. Cercotrichas erythropterus, *L.* ..	8
174. (Lamprotornis ? ?) leucogaster, *Temm.*	11
147. Thamnolæa albiscapulata, *Rüpp.* ..	9 * 2 † 8
148. Mammobia melæna. *Rüpp.* ..	5 * 3 † 7
149. Saxicola lugubris, *Rüpp.*	8
150. S. isabellina, *Rüpp.*	5 * 3 † 16
151. S. deserti ? *Rüpp.*	4
152. S. (? leucomela Paleas)	12
153. S. œnanthe ? *L.*	7

	No. of Specimens of each Species.
154. S. *sp.*	1
155. S. *sp.* .. .. .. * ..	4
156. S. *sp.*	1
158. Cercomela melanura, *Rüpp.* ..	5
158A. C. do young ?	1
157. Pratincola rubetra, *L.*	1
159. P. rubicola, *L.*	4
160. P. (perhaps P. melanoleuca, *Hengl.*)	3 * 1 † 6
161. P. sordida, *Rüpp.*	3 * 3 † 3
163. Motacilla Dukhunensis, *Sykes* ..	4
164. Budytes melanocephala, *Licht.* ..	10
165. B. viridis, *Gmel.*	3
165A. B. *sp.* (? var. of last)	1
166. B. *sp.*	1
167. Calobates sulphurea, *Bechst* ..	1
168. Agrodroma sordida, *Rüpp.* ..	2
169. A. *sp.*	2
170. A. *sp.*	2
171. A. *sp.*	3
172. Anthus cervinus? *Pallas*	2
173. Macronyx flavicollis, *Rüpp.* ..	2
Family—Ampelidæ.	
175. Zosterops paliogastra ? *Hengl.* ..	1
176. Z. abyssinica, *Guer.*	2
Family—Paridæ.	
177. Parus leucomelas, *Rüpp.*	3
178. P. dorsatus, *Rüpp.*	4
Family—Corvidæ.	
179. Corvus affinis, *Rüpp.*	7
180. C. Scapulatus, *Daud.*	9
181. Corvultur crassirostris, *Rüpp.* ..	1
Family—Sturnidæ.	
182. Ptilorhinus albirostris, *Rüpp.* ..	9
183. Amydrus ruppelli, *Verreaux* ..	4 * 5 † 8
183A. A. do *var.*	4 * 4 † 8
184. Lamprotornis æneus? *L.*	4 * 4 † 9
185. L. (? chalybæus, *Ehr.*)	3
185A. L. do. ? young	1
186. L. cyaniventris, *Blyth.*	13
187. L. rufiventris, *Rüpp.*	6
188. Textor alecto. *Temm.*	4
189. Buphaga erythrorhyncha, *Stanley* .	9
189A. B. do. young	1

	No. of Specimens of each Species.
Family—Fringillidæ.	
190. Hyphantornis larvatus, *Rüpp.* ..	6
	5 * 1 †
190A. H. do. in winter plumage ..	3
192. H. guerini, *Gray*	12
	6 *
193. H. galbula, *Rüpp.*	18
	7 *
194. H. personata, *Cassin*	3 *
195. Euplectes exanthomelas, *Rüpp.* ..	6
	4 * 2 †
191. E. *sp.*	1 *
196. Quelea sanguinirostris, *Sw. var.* Orientalis	12
	7 * 5
197. Coliuspasser macrocercus ? *Licht.* ..	5
	2 * 3 †
198. Vidua aphenura, *Ver.*	3
199. V. principalis, *Cuv.*	2
200. Amadina (Euroloncha) cantans, *Gm.*	4
201. A. (ortygospiza) polyzona, *Temm.*	2
202. Estrelda fremita, *Licht.*	3
203. E. ernesti, *Hengl.*	2
204. E. (Lagonosticta) minima, *Vieill.* ..	3
205. E. (phœnicotis) *Sw.*	5
	4 * 1 †
206. Zonogastris citerior, *Strickl.* ..	6
	4 * 2 †
207. Emberiza septemstriata, *Rüpp.* ..	9
	3 †
208. E. flavigaster, *Rüpp.*	4
209. Passer Swainsoni, *Rüpp.*	11
210. P. (perhaps P. superciliosus, *A. Hay*)	6
211. P. *sp.*	1
212. P. ? tristriatus, *Rüpp.*	7
213. Crithagra xanthopygius, *Rüpp.* ..	2
214. C. nigriceps, *Rüpp.*	3
215. C. (perhaps, C. aurifrons, *Hengl.*)	2
216. C. citrinelloides ? *Rüpp.*	2
217. Serinus striola tus, *Rüpp.*	5
Family—Alaudidæ.	
218. Pyrrhulauda (? crucigera) *Temm.*	17
	11 * 6 †
219. P. leucotis, *Stanley*	2
	1 * 1 †
220. Ammomanes, *sp.*	2
221. Calendrella brachydactyla, *Temm.*	4
222. C. ruficeps, *Rüpp.*	6
223. Galerida cristata, *L.*	12
223A. G. do. ? albino, *var.*	1
224. Alauda, *sp.* (near arvensis, *L.*) ..	7
224A. A. ? do. dark, *var.*	1
225. Certhilauda desertorum, *Stanley* ..	6
	3 * 3 †

	No. of Specimens of each Species.
ORDER—GEMITORES.	
Family—Columbidæ.	
226. Columba guinea, *L.*	6
227. C. albitorques, *Rüpp.*	3
228. Turtur erythrophrys, *Swains.* ..	5
229. T. Lugens, *Rüpp.*	6
230. T. (? albiventris, *Gray*)	5
231. T. senegalensis ? *L.*	6
232. Peristera chalcospilos, *Sw.* ..	8
233. Œna capensis, *Lath.*	12
	7 * 5 †
233A. Œ. do. young	2
	1 * 1 †
234. Treron abyssinica, *Lath*	6
ORDER—RASORES.	
Family—Pteroclidæ.	
235. Pterocles exustus, *Temm.* ..	2
	1 * 1 †
236. P. lichtensteini, *Temm.*	8
	3 * 5 †
237. P. gutturalis ? *A. Smith*	2
	1 * 1 †
Family—Numididæ.	
238. Numida ptilorhyncha, *Licht.* ..	7
Family—Perdicidæ.	
239. Chacura melanocephala, *Rüpp* ..	1
240. Francolinus erckelii, *Rüpp* ..	7
	4 * 3 †
241. F. ruppelli, *G. R. Gray*	9
	4 * 5 †
242. F. gutturalis, *Rüpp.*	6
	5 * 1 †
243. Pternistes rubricoleis, *Rüpp.* ..	8
	4 * 3 † 1 ?
ORDER—GRALLATORES.	
Family—Otidæ.	
244. Otis (Eupedotis) Arabs, *L.* ..	5
	4 * 1 †
245. O. (Sypheotides) melanogaster, *Rüpp.*	2
	1 * 1 †
Family—Charadridæ.	
246. Œdienemus crepitans, *Temm.*	2
247. Œ. affinis, *Rüpp.*	1
248. Charadrius melanopterus, *Rüpp.* ..	4
249. Œgialitis geoffroyi, *Wagla* ..	1
249A. Œ. do? (in summer plumage) ..	1
250. Œ. mongolicus, *Pallas*	2

	No. of Specimens of each Species.
251. Œ. *sp.*	4
252. Œ. *sp.*	2
253. Œ. *sp.*	4
254. Sarciophorus pileatus? *L.*	4
255. Lobvanellus melanocephalus. *Rüpp.*	1
256. L. senegalensis, *L.*	3
257. Hoplopterus spinosus, *L.*	4
258. Glareola limbata, *Rüpp.*	2
259. Dromas ardeola, *Paykull*	2
Family—Scolopacidæ.	
260. Numenius arquata, *L.*	4
261. N. phæopus, *L.*	1
262. Scolopax gallinago, *L.*	1
263. Rhynchæa bengalensis, *L.*	1
264. Terekia cinerea, *Gmel.*	1
265. Actitis hypoleucos, *L.*	2
267. A. Ochropus, *L.*	1
266. Totanus calidris, *L.*	1
268. Tringa cinctus, *L.*	1
269. T. minuta, *Bechstein*	1
Family—Rallidæ.	
270. Rallus abyssinicus, *Rüpp.*	3
271. Gallinula chloropus, *L.*	1
272. Fulica cristata, *L.*	3
Family—Ardeidæ.	
273. Ardea atricollis? *Wagl.*	1
274. Herodias garzatta, *L. var.*	3
274a. H. (? do. *var.*)	1
275. Demi-egretta asha, *Sykes*	1
276. Ardeola, *sp.*	1
277. Butorides, *sp.*	1
277a. B. (? in summer plumage)	1
Family—Ciconidæ.	
278. Scopus umbretta, *L.*	4
279. Ciconia abdimii, *Ehr.*	3
Family—Tantalidæ.	
280. Ibis (geronticus) comata, *Ehr.*	2
281. I. (Harpiprion caruncula) *Rüpp.*	3
ORDER—NATORES.	
Family—Anatidæ.	
283. Anas flavirostris, *Smith*	4
284 Fuligula cristata, *Ray.*	2 †
285 Querquedula crecca, *L.*	1 †
286 Chenalopex Ægyptiaca, *L.*	6
282 Bernicla cyanoptera, *Rüpp.*	1

	No. of Specimens of each Species.
Family—Podicipidæ.	
287. Podiceps cristatus, *L.*	3
	2 * 1 †
288. P. phillipensis, *Gur.*	1 †
289. P. auritus, *L. var.*	1 †
Family—Laridæ.	
290. Larus, *sp.*	2
291. Xema, *sp.*	6
292. X. *sp.*	1
293. X. *sp.*	3
294. Thalasseus bengalensis, *Less.*	3
295. Onychoprion, *sp.*	4
Family—Phaëtonidæ.	
296. Phaëton rubricauda, *Bodd.*	1
Family—Gracculidæ.	
297. Graculus africanus? *Gm.*	2
Family—Pelicanidæ.	
298. Pelicanus rufescens, *Lath.*	2
299. P. phillipensis, *Gm.*	1
	1,316

RESUMÉ.

Orders.	Species.	Specimens.
Raptores	28	84
Scansores	3	23
Insessores	194	970
Gemitores	9	59
Rasores	9	50
Grallatores	38	86
Natatores	18	44
Total	299	1,316

C—*Eggs.*

30. Agapornis taranta	1
33. Merops cuvieri	1
42. Oxylophus afer?	1
108. Lanius collaris	identified. 1
159 or 160? Pratincola? *sp.?*	identified. 2
194. Hyphantornis personata	1
238. Numida phlorhyncha	identified. 1
	identified. 8

	No. of Specimens of each Species.
C—Skeletons.	
29. Pœocephalus meyeri	1
35. Barbatula chrysocoma (imperfect) .	1
36. Trachophonus margaritatus (1 perfect, 1 imperfect)	2
48. Turacus leucotis (imperfect) ..	1
49. Chizaerhis zonurus	1
70. Coracias abyssinica (imperfect) ..	1
71. C. levaillantii (do.) ..	1
72. Eurystomus afer (do.) ..	1
83. Merops cuvieri (do.) ..	1
88. Tockus erythrorhynchus	1
90. Tmeteceros abyssinicus	1
92. Promerops erythrorhynchus ..	1
188. Textor alecto (imperfect)	1
240. Francolinus erkelii	1
243. Pternestis rubricollis	2
	17
D—Sterna.	
RAPTORES.	
3. Gyps Rüppelli	1
2. Neophron percnopterus	2
4. N. pileatus	1
5. Falco juggur?	1
6. F. *sp.*	1
9. Tinnunculus alaudarius	2
10. T. cenchris	1
12. Accipiter undulventer	1
13. Micronisus niger	2
15a. Micronisus ephemurus	1
16. Aquila nœvioides	5
17. Helotarsus ecaudatus	1
18. Buteo augur	3
19. Gypogeranus serpentarius	1
1. Gypactos meridionalis	2
21. Milvus ægyptius	1
22. Circus æruginosus	1
23. C. cinereaceus	2
25. Bubo cinereaceus?	2
26. B. maculosus	1
27. Athene meridionalis	2
28. Scops vulgaris	4
Scansores.	
29. Pœocephalus meyeri	4
30. Agaporius taranta	3
	42
Insessores.	
32. Pogonorhynchus saltii .. .	1
34. P. melanocephalus	1
35. Barbatula chrysocoma	1
36. Trachyphonus margaritatus ..	3
37. Picus æthiopicus	1
38. P. hemprichii	1
39. Indicator, *sp.*	1
41. Cuculus canorus	1
42. Oxylophus afer?	3
43. O. melanoleucos	1
44. Chrysococcyx, *sp.*	2
45. C. *sp.*	1
46. Centropus monachus	1
47. C. superciliosus	2
48. Turacus leucotis	3
49. Chizaerhis zonurus	2
50. Calius leucotis	3
51. C. senegalensis	4
52. Caprimulgus, *sp.*	1
53. C. *sp.*	2
55. Cypselus æquatorialis	2
56. C. apus	2
57. C. affinis	1
58. Hirundo melanocrissus	1
61. H. filicaudata?	1
H. rustica, *L. var*	1
68. Cotyle torquata?	2
69. C. rupestris	1
70. Coracias abyssinica	5
71. C. levaillantii?	2
72. Eurystomus afer?	4
73. Halcyon ruficventer	1
74. H. *sp.*	2
75. H. cœrulea	1
76. Alcedo senegalensis	3
78. Ceryle, *sp.*	1
79. Merops lamarckii	2
82. M. cœruleocephalus	2
84. M. hafresnayii	3
86. Tockus limbatus	1
87. T. flavirostris	2
88. T. erythrorhynchus	3
89. T. nasutus	5
90. Tmeteceros abyssinicus	2
91. Upupa epops	3
92. Promerops erythrorhynchus? ..	3
94. P. cyanomelas	2
95. Nectarinia abyssinica	4
97. N. cruentata	2
99. N. Tacazze	1
101. N. pulchella	2
102. Tchitrea ferreti	2
104. Muscicapa torquata, *L.*	3
106. Lanius rufus	1
107. L. cristatus	3
108. L. collaris	2
110. Telephorus æthiopicus	1
111. Dryoscopus cubla	1
112. Nilaus Brubu	2
113. Laniarius erythropterus?	3
114. L. cruentatus	4

	No. of Specimens of each Species.
115. Dicrurus lugubris	2
116. Turdus olivaceus	3
117. T. simensis	3
118. Petrocincta cyaneus	3
121. Pycnonotus arisnoë	4
122. Oriolus moloxita	1
123. Crateropus leucopygius	1
125. Chatarrhœa, *sp.*	1
133. Drymoica, *sp.*	1
135. Oligura micrura	1
136. Phyllioscopus natareri	1
142. Acrocephalus, *sp.*	3
143. Ruticilla, *sp.*	2
144. R. phœnicura	1
145. Aëdon galactodes	1
146. Cercotrichas erythropterus ..	2
147. Tæniolæa albiscapulata	3
174. Lamprotornis? leucogaster ..	2
148. Mamnobia melæna	3
149. Saxicola lugubris	3
150. S. isabellina	4
151. S. deserti	2
153. S. œnunthe	1
158. Cercomela melanura	1
164. Budytes melanocephala	1
772. Anthus cervinus	2
176. Zosterops abyssinica	1
178. Parus dorsatus	2
179. Corvus affinis	4
181. Corvultur crasserostris	1
182. Ptilorhinus albirostris	4
183. Amydius rüppelli	4
184. Lamprotornis acuens?	2
186. L. cyaniventris	2
188. Textor alecto	3
189. Buphaga erythrorhyncha	2
190. Hyphantornis larvatus	4
192. H. guerini	3
193. H. galbula	1
195. Euplectes xanthomelas	2
196. Quelea sanguinirostris	2
197. Colinspasser macrocercus	1
198. Vidua sphenura	2
199. V. principalis	1
202. Estrelda zonata	1
203. E. ernesti	1
205. E. phœnicotis	1
206. Zonogastris citerior	1
208. Emberiza flavigaster	3
209. Passer swainsoni	2
212. P.? tristriatus	1
217. Serinus striolatus	1
218. Pyrrhulauda cruciger a	3
221. Calendella brachydactyla	2
223. Galerida cristata	2
224a. Alauda, *sp.*	1
225. Certhilauda desertorum	2

	No. of Specimens of each Species.
Gemitores.	
226. Columba guinea	2
227. C. albitorques	1
229. Turtur lugens	1
230. T. albivectris?	1
231. T. senegalensis?	1
233. Œna capensis	3.
Rasores.	
238. Numida ptilorhyncha	2
240. Francolinus erckelii	5
241. F. Rüppelli.	2
242. F. gutturalis	2
243. Pternestis rubricollis	2
Grallatores.	
244. Otis Arabs	2
245. O. melanogaster	2
246. Œdicnemus crepitans	1
248. Charadrius melanopterus	3
249a. Egiptilis Geoffroyi	1
257. Œ., *sp.*	2
253. Œ., *sp.*	1
254. Sarciophorus pileatus	1
256. Labivanellus senegalensis ..	1
257. Hoplopterus spinosus	1
258. Glareola limbata	2
259. Dromas ardeola	2
260. Numenius arquata	1
266. Totanus calidris	1
268. Tringa cinctus	1
269. T. minuta	1
270. Rallus abyssinicus	3
271. Gallinula chloropus	1
272. Fulica cristata	2
274. Herodias garzetta?	3
276. Ardeola, *sp.*	1
277. Butorides, *sp.*	1
278. Scopus umbretta	3
279. Ciconia abdimii	1
280. Ibis comata	2
281. I. carunculata	3
Natatores.	
283. Anas flavirostris	1
284. Fulegula cristata	1
286. Chenalopex ægyptiaca	2
282. Bernicla cyanoptera	1
287. Podiceps cristatus	3
288. P. phillipensis	1
289. P. auritus	1
291. Xema, *sp.*	3
295. Onychoprion, *sp.*	2
296. Phaëton rubricanda	1
297. Grambus africanus?	1
298. Pelicanus rufescens	2
299. P. phillipensis	1

	Species.	Specimens.
Sternæ of Raptores ..	22	35
,, Scansores ..	2	7
,, Insessores ..	118	238
,, Gemitores ..	6	9
,, Rasores ..	5	13
,, Grallatores ..	26	43
,, Natatores ..	13	20
Total of Sterna ..	192	365

RESUMÉ—CLASS AVES.

	Species.	Specimens.
Skins	299	1,316
Eggs	7	8
Skeletons	15	17
Sternæ	192	365
Total ..	299	1,706.

III. CLASS.—REPTILIA.

ORDER—CHELONIA.

Family—Testudinidæ.

1. Cimixys belliana, *Gray* .. .. — No. of Specimens of each Species: 5 dried specimens.

Family—Emydidæ.

2. Pelomedusa gehaffiæ, *Gray* .. — No. of Specimens of each Species: 6 (3 dried specimens, 3 in spirits).

ORDER—SAURIA.

Family—Chamæleonidæ.

3. Chamæleo lævigatus? *Gray* .. — No. of Specimens of each Species: 1 in spirits.

Family—Varanidæ.

4. Varanus ocellatus? *Rupp.* .. .. — No. of Specimens of each Species: 1 in spirits.

Family—Agamidæ.

5. Stellio cyanogaster, *Rüpp.* .. — No. of Specimens of each Species: 21 in spirits.

7. S. *sp.* .. .. — 2 in spirits.

6. Agama, *sp.* .. .. — 1 in spirits.

8. A., *sp.* .. .. — 1 in spirits.

Family—Lacertidæ.

9. Acanthedactylus, *sp.* .. .. — 2 in spirits.

10. A. *sp.* .. .. — 2 in spirits.

11. Eremias, *sp.* .. .. .. — 1 in spirits.

12. E., *sp.* .. .. — 1

Family—Scincidæ.

13. Euprepis, *sp.* .. .. .. — 1 in spirits.

14. E., *sp.* .. .. — 1 in spirits.

15. E., *sp.* .. .. — 5 in spirits.

51

16. Eumeces? *sp.* .. .. .. — 1 in spirits.

ORDER—OPHIDIA.

Family—Typhlopidæ.

17. Ophthalmidion, *sp.* .. .. .. — 1 in spirits.

Family—Viperidæ.

18. Echis arenicola? *Boie* .. .. — 2 in spirits.

Family—Dasypeltidæ?

19. ? Dasypeltis, *sp.* .. .. .. — 2 in spirits.

Family—Colubridæ.

20. Zamensis, *sp.* .. .. .. — 2 in spirits.

22. Geophis, or an allied genus .. — 1 in spirits.

Family—Dryiophidæ.

21. Dipsas, *sp.* .. .. — 2 in spirits.

23. ? Tragops, *sp.* .. .. .. — 1 in spirits.

	No. of Specimens of each Species.
ORDER—BATRACHIA.	
Family—Ranidæ.	
24. Rana, *sp.*	1 in spirits.
25. R.	4 in spirits.
25A. R.? do. *var.*	4 in spirits.
26. Ranidæ (genus?) *sp.*	2
Family—Bufonidæ	
27. Bufo, *sp.*	6 in spirits.
28. B.	2 in spirits.
29. B.	1 in spirits.
30. B.	1 in spirits.
31. B.	2 in spirits.
	86

RESUMÉ.

Orders.	Species.	Specimens.
Chelonia	2	11
Sauria	14	42
Ophidia	7	10
Batrachia	8	23
Total ..	31	86

IV. CLASS PISCES.

Family—Cyprinidæ.

1. ? Genus and *sp.* .. .. .. 1 specimen in spirits, Lake Ashangi, in poor condition.	1
2. ? Genus and *sp.* .. .. .. 1 skin dried. Stream on highlands.	1
3. ? Genus and *sp.* .. .. .. 10 specimens in spirits, Stream Suru.	10
4. ? Same genus, another *sp.* .. .. 11 specimens in spirits, stream north of Massowah.	11
5. A small collection of minute plagic fish taken in the towing net off the S.E. coast of Arabia; several species about 12, and about 30 specimens. A few in bad condition.	33
Another similar small collection from the Red Sea. 4 or 5 species, 8 specimens	8
	61

RESUMÉ.

	Species.	Specimens.
Pisces	about 20	about 60

GENERAL RESUMÉ.

	Species.	Specimens.
Mammalia	40	166
Aves	299	1,706
Reptilia	31	86
Pisces, about	20	61
Total ..	390	2,019

Manuscripts found in Magdala.

On the capture of Magdala, a large number of Ethiopian manuscripts were found, having been carried there by Theodore from the libraries of Gondar and the central parts of Abyssinia during his late expedition, in which he destroyed very many Christian churches.

On finding that Magdala would have to be abandoned to the Gallas, it became necessary to provide for the safety of these volumes, which would otherwise have been destroyed by the Mahommedans. About 900 volumes were taken as far as Chelikot, and there about 600 were delivered to the priests of that church, one of the most important in Abyssinia. 359 books were retained for the purpose of scientific examination,

and in the hope that some light might be thrown by them, through the labours of the learned men of Europe, on the ancient history of Ethiopia, and on the records of Christianity.

These manuscripts were carefully examined by M. Münzinger, its title written in each volume, and the books were handed over to the British Museum.

The following is the report of Dr. Wright, of the British Museum, on the manuscripts :—

Report by Dr. Wright.

"The collection of manuscripts deposited in the British Museum by the order of "Sir S. Northcote consists of 359 volumes, one of which is a paper manuscript, in Coptic "and Arabic. The remainder are Æthiopic, with the exception of about half-a-"dozen, which are written in the modern Amharic dialect.

"Of these manuscripts, four or five are paper, the rest vellum. They are mostly "well bound, and in good preservation, and some of them contain pictures, representing "the state of art in Abyssinia during the last two or three centuries. The oldest "among them Dr. Wright finds to be of the fifteenth and sixteenth centuries, but the "great bulk of the collection belongs to the seventeenth and eighteenth, and some "were written during the present century, even in the reign of the late King Theodore.

"The following are some of the more important classes :—

"1. Manuscripts of the Holy Scriptures, comprising the whole of the canonical "books of the Old and New Testaments, as well as the Apocrypha, among the latter "may be specified the Book of Enoch, the Rufate ('Liber Jubilaeorum' or 'Parva "Genesis'), and the Ascension of Isaiah.

"2. A Lectionery, several missals and other office books, psalters, antiphonaries, "Hymn-books, and Prayer-books.

"3. Collections of homilies and discourses for festivals, saints' days, &c. Here may "be mentioned the Gebra Hemamal or services for Passion week, the Nagara and "Manjane Dersana Mikail, Dersana Gabriel, and Dersana Rufail, besides the Miracles "of the Virgin Mary,' and the 'Miracles of Jesus.'

"4. The Patristic literature is represented by various translations from the Greek "and Arabic, such as the Ancoratus of Epiphanies, some works of Cyril of Alexandria, "the Commentary of Chrysostom on the Epistle to the Hebrews, and the works Mar "Isaac. Other ecclesiastical works of importance are the Dedas Caliz Apostolorium, the "sinodqs or collection of Canons of the Councils, the treatises ascribed to Clement the "Haimanota Abau, or 'Faith of the Fathers'; the Lena Abau, 'History or Paradise of "the Fathers,' Tilekseyus or Philoxenus, Aragani Maufasawi, Faus Maufasawi, the "huge compilations called Hawiand Talmid, and the Fetha Nagast, or 'Laws of the Kings."

"5. The department of history is not so well supplied, but the collection comprises "copies of the Jewish history of Joseph ben Gorwon, or Joseppon, the Kebra Nagast "or 'Glory of the Kings'; the Universal History of George Walda Amid, the Chrono-"logy of Abu Shaker, and two Æthiopian chronicles of considerable value. The "History of Alexander the Great is rather to be regarded as a romance.

"6. Finally may be mentioned the Seukesor, or Synascarium, of which there are "several copies; the Gadla Hawareyat, or acts of the Apostles and Disciples, and "numerous lives of Saints.

"Looking to the number and intrinsic value of these manuscripts, this seems to be "the largest and finest collection of Æthiopic literature in Europe. Certainly it far "surpasses in extent that of the French traveller, M. Antoine D'Abbadie, the printed "catalogue of which comprises 234 numbers, and if it were added by the Trustees to

"their present collection of about 115 manuscripts, the British Museum would probably "be placed in the first rank in another department of Oriental literature besides the "Syriac.

"Dr. Wright has set apart sixteen of the finest manuscripts with pictures, from "which a selection may be made for the Royal Library at Windsor Castle."

Towards the conclusion of the campaign the Commander-in-Chief directed Captain W. Goodfellow, R.E., to make some excavations among the ruins of the ancient Adulis. The following is the report of that officer addressed to the Assistant Quartermaster-General of the Force, and dated the 9th June, 1868:—

Excavations among ruins of Adulis.

"I HAVE the honour to report that in accordance with the wishes of his Excellency "the Commander-in-Chief, as communicated to me at Antalo on the 14th ultimo, I lost "no time in coming on to Zula, arriving here on the 24th ultimo.

Captain Goodfellow's Report.

"2. On informing the Commanding Engineer that I had been directed to apply to "him for a working party to enable me to make excavations with a view to discovering "some remains of ruins of the Ancient Adulis, I was told that owing to the amount "of work in hand just at that time I could not have more than 25 men of the Madras "Sappers and Miners; with this small party, however, I at once made a commencement. "Three narrow trenches being cut into some of the tumuli the walls and foundations of "old buildings were discovered. At one spot some cut stone columns were found, and "this induced me to remove more of the débris in the immediate vicinity, when the out-"line of a building, as shown in the accompanying plan, was discernible. I also ascer-"tained by excavation that the foundations of this building, in which the bases of the "cut stone columns were found in true position, were 13 feet deep.

"The columns, judging from the portions lying about, were apparently in their "original state built up, clamped with iron and run with lead.

"4. I have been unable to discover any capitals to suit the stone columns, nor is "there any trace of how the roof of this building was supported.

"As shown on the plan, the building was erected east and west; at the last end "there are the remains of what may once have been an altar, and the masonry exposed "leads to the supposition that the last end was shaped in the form of an apex.

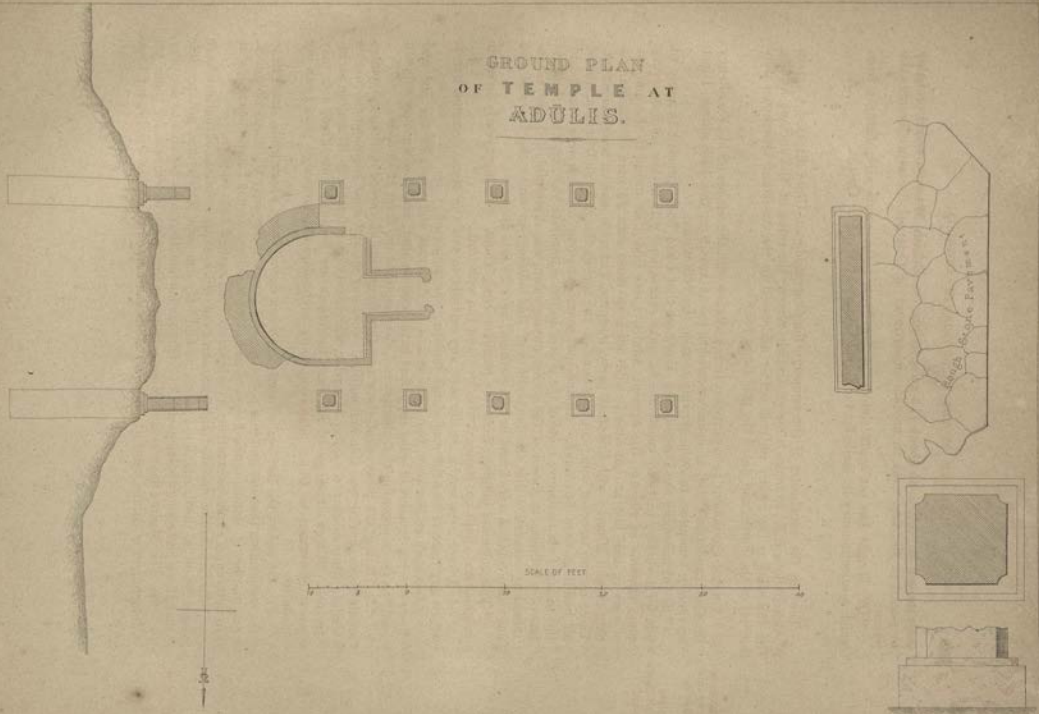
"5. During the progress of the excavation fragments of carved marble, flat pieces "of alabaster, having one side well polished, were dug up, and some fragments of marble "shafts; also one carved capital in marble, which may be referable to Byzantine archi-"tecture. Rough drawings of all these fragments are herewith submitted, and may "prove interesting to those possessing more archæological knowledge than I can lay "claim to.

"6. On one of the last slabs found there is a carved cross, which lends strength to "the supposition that the building now exposed was one of the early Christian Churches, "but whether it stands on the débris of still older buildings or not I have been unable "to determine, as the excavations have scarcely been carried deep enough.

"7. Besides the marble fragments, shreds of different descriptions of pottery have "been found in the débris, but I regret to add only one coin, which it is just possible "that those possessing the requisite knowledge in such matters may be able to decipher.

"8. The Madras Sappers and Miners, being under orders to embark for India, the "detachment at Adulis was withdrawn on the 5th instant, and on the 7th instant I was

GROUND PLAN OF TEMPLE AT ADULIS.



"permitted to avail myself of the services of one company of Bombay Sappers and "Miners (80 men). Notwithstanding the great heat and difficulties about supplying the "men with such an allowance of water as would satisfy them, I have had most willing "and industrious excavators, and it is much to be regretted that there is not time, now "that the campaign is over and all the arrangements for evacuating the country com- "plete, to continue this work, so as to throw light on the history of some of the hidden "things of the past."

Report by Mr. Franks, on articles found at Adulis.

The following is the report by the officer in charge of the Department of Antiquities of the British Museum, on the articles found at Adulis, which were presented to that institution :—

"Mr. Franks has the honour to report that two cases have been received from the "India Office, containing various fragments of marble excavated by the British troops "in Abyssinia. They appear to have been chiefly found amid the ruins of a church at "Adulis, near Annesley Bay, a view of which has been published in the 'Illustrated "London News' for September 5, 1868.

"The most important of the specimens are the following :—

"1. A white marble capital.
"2. and 3. Two portions of marble shafts.
"4. Part of a bas-relief representing a cross.
"5. Part of another similar.
"6. Various fragments of marble and alabaster vessels.
"7. The fragments of an earthen vessel.

"These objects are not of great archæological value, but considering the distant "spot on which they were found, and the light which they throw on the state of the "decorative arts in Abyssinia in early times, they are well worthy of a place in the "Museum.

"Mr. Franks has likewise received from the same source nine wooden altar slabs, "of which some have Ethiopic inscriptions.

Altitudes of places in Abyssinia.

The following Table shews the ALTITUDES of Places in Abyssinia, as described by different observers.

Hadas Valley, &c.	1. Trigonometrical Survey.	2. Quarter-Master-General's Department.	3. Dr. Cook.	4. Mr. Markham.	5. Mr. Rohlfs.	Other Authorities.†
	Feet.	Feet.	Feet.	Feet.	Feet.	
Mount Gedem	2,730	..	..	..	..	Wiah, 549 Lef., 623 F. and G.
Haloda	..	430	..	..	..	1,530 F. and G.
Illalia	..	1,377	..	..	..	3,145 Lef.
Tsbo	..	2,740	..	..	..	4,574 F. and G.
Mahlo	..	3,510	..	..	..	
Moderto	..	4,223	..	..	..	
Dinda Plain	..	6,272	..	..	..	
Tekunda, King's Camp	..	6,600	..	..	..	
Mount Tsaro	9,048*	7,974	..	..	..	9,407 d'Ab.
„ Asswut	8,380	7,711	..	..	..	
„ Urug (Habeaha Melaysha) ..	7,940*	..	..	..	..	8,397 d'Ab.
„ Sa'aas	8,712	..	..	..	..	9,046 d'Ab.
Halai	8,412	..	..	..	..	8,625 d'Ab., 8,246 Lef. 8,520 Rüp.

† d'Ab. *means* d'Abadie; F. and G. *mean* Feret and Galinier; Rüp. *means* Rüppel; Lef. *means* Lefebore.

ALTITUDES of Places in Abyssinia—*continued.*

	1. Trigonometrical Survey.	2. Quarter-Master-General's Department.	3. Dr. Cook.	4. Mr. Markham.	5. Mr. Rohlfs.	Other Authorities.
	Feet.	Feet.	Feet.	Feet.	Feet.	
Da'ara village	3,680	..	..	..	..	
Mount Intokoko	8,170	..	..	..	..	
Hadas, source	7,340	..	..	..	..	
Mount Aroma	7,497	..	..	..	..	
„ Tahuila	9,285*	..	..	..	..	6,729 d'Ab.
Kumayli Pass, &c.						
Kumayli, Railway Terminus ..	..	..	..	..	..	
„ Camp	1,050*	418	..	..	..	
„ Hill	1,490	..	..	..	..	
Mount Abalu	7,610*	..	..	..	..	
Alumta	2,302*	..	..	..	..	
Surn, Lower	1,440*	1,110	..	..	..	
„ Upper	2,600*	2,070	..	3,321	..	
Matan or Undul Wells	3,947	..	..	..	..	
Mount Param	2,985*	..	..	..	..	
Hadim	3,389	..	..	..	..	
Pass east of Hadim	4,150	..	..	..	..	
Imfahagn	1,260	..	..	..	..	
Barugedi	..	2,621	..	..	..	
Sonakti	..	3,152	..	..	..	
Rahagedi	6,874	5,288	..	7,418	..	
Senafe, Camp	7,690	7,464	8,175	8,397	..	Matara Hill above Senafe 8,343 d'Ab.
Akub Terika	9,047	..	..	10,963	..	9,480 d'Ab.
Matara Heights	3,208	..	..	..	..	
Mashal Heights	3,540	..	..	..	..	3,735 d'Ab.
Shimazana Heights	8,635	..	..	..	..	
Mount Kishat	2,680	..	..	..	..	9,266 d'Ab.
Mount Seera	9,550	9,282	..	10,709	..	10,433 d'Ab.
Ad-Hazu	8,976*	..	..	..	..	
Senafe to Magdala						
Gunagona Camp	6,860	7,354	7,510	8,737	..	
Mount Gondegonta (Zibah sifran or Senafe)	10,314*	..	..	..	..	10,917 d'Ab.
Feeada Camp	7,890	..	..	..	..	
Mount Sargen	9,204*	..	..	..	..	9,771 d'Ab.
Adigrat	7,740	7,513	8,300	9,440	..	8,290 d'Ab., 8,088 F. and G., 8,180 Rap.
Mount Alequa, No. 1	10,392*	..	..	..	..	11,035 d'Ab., 10,150 F. and G.
„ No. 2	10,192*	..	..	..	..	10,729 Lef.
Mai Wahez	7,940	7,957	8,079	..	..	
Argutti	..	..	..	9,530	..	
Adabaga	7,753	7,600	8,050	9,140	..	
Dongolo	..	..	6,736	..	..	
Aguia	6,355	6,356	6,700	7,645	..	
Dolo	5,822	6,295	7,207	7,957	..	
Eikullet	..	..	7,359	..	..	
Chelikot	..	6,144	6,800	7,600	..	6,693 F. and G., 6,279 Lef.
Antalo	..	7,356	..	..	..	
Buya	6,497	6,144	6,995	7,600	..	
Amba Aradom	..	..	..	..	..	
Garajan Heights	8,652	..	..	..	9,385	
Mai Magah	6,610	6,300	6,700	..	..	
Fingalat Height	8,010*	..	..	..	..	
Gatba Hairat (Muja)	9,190*	9,225	..	10,814	..	
Maaibk	7,624	7,800	7,992	..	..	
Alaji Pass	9,875	9,700	10,420	..	..	
„ Amba	10,798*	11,200	..	..	9,880	
Azala	7,982	7,200	8,361	8,790	..	
Mesao	..	..	..	..	7,089	11,880 Lef.
Duggeduka Amba	..	..	..	..	7,580	
					10,950	

ALTITUDES of Places in Abyssinia—*continued.*

	1. Trigonometrical Survey.	2. Quarter-Master-General's Department.	3. Dr. Cook.	4. Mr. Markham.	5. Mr. Rohlfs.	Other Authorities.
	Feet.	Feet.	Feet.	Feet.	Feet.	
Debra Musa Pass	9,133	..	..	..	8,407	
Aiba Valley	8,580	..	..	..	7,864	
Debar Pass	10,524	10,200	11,189	..	9,728	
Bulago Camp	9,161	..	..	..	..	
Doba	..	..	..	..	7,324	
Makan (Haya)	7,300	7,300	8,168	..	7,101	
Aroma	7,497*	..	..	..	..	
Pass above Makan	8,254	..	..	..	..	
Aahara Pass	9,125	8,920	..	..	8,547	
Ashangi Lake	7,892	8,121	8,343	..	7,364	
Aine Mai	..	8,300	..	..	..	
Hill N. E. of Ashangi	8,737*	..	..	..	..	
,, S. W.	9,815*	..	..	..	..	
Mussagita Camp	..	8,300	..	..	8,026	
Tsolog	10,390*	..	..	..	..	
Wombarat Pass	9,130	9,900	..	..	8,943	
Mountain west of it	10,316*	..	..	..	..	
Lat	..	9,005	..	..	8,478	9,784 Lef.
Daffat Pass	..	9,825	..	..	..	9,502 Lef.
Mountain east of it	10,370*	..	..	..	..	
Marawih (Assangalla)	..	7,400	..	..	5,899	
Ahio	..	..	..	..	6,952	
Dildi (Teslare)	..	7,878	..	..	7,005	
Terragezana Amba	..	..	..	..	8,073	
Wandach Pass	10,912	10,500	..	..	10,600	11,463 Lef.
Emaao Amba Pass	..	..	..	..	10,660	
Abuna Yosef	13,500*	..	..	..	..	
Muja Camp	9,472	..	..	..	..	
Takazze River	..	7,795	..	..	..	
Santara Camp	10,500*	10,500	..	..	..	
Gaiso	10,200*	10,200	..	..	..	
Abdikom	..	..	..	..	9,250	
Jodda River	5,995	5,800	..	..	..	
Talanta, Tukrena	9,082	9,100	..	..	..	
,, Baba	..	9,200	..	..	..	
Bashilo River	5,971	5,800	..	..	..	
Gombagie	7,892	7,186	..	..	..	
Affijo Camp	..	7,646	..	..	..	
Islamgie	8,647	7,630	..	..	..	
Selassie	9,161	9,076	..	..	..	
Falah	8,823	..	..	..	..	
Magdala	9,190	9,100	..	..	..	

1. The Officers of the Trigonometrical Survey determined their altitudes by observing the boiling point, and in some instances, by trigonometrical measurements. The heights obtained by the latter method are marked by an asterisk.

2. The heights given in the Reports of the Quartermaster-General's Department have been obtained by aneroid observations.

3. Dr. Cook determined his altitudes by careful aneroid observations.

4. The heights contained in Column 4 are computed from Mr. Markham's boiling-point observations. Mr. Markham also obtained the following heights by aneroid:—

Senafè	7,780 feet.	Agula	7,398 feet.
Gunaguna	6,336 ,,	Buya (Antalo)	7,747 ,,
Adigrat	7,680 ,,		

He observed the boiling point and aneroid at many additional places, but not having noted the temperature of the air, these observations are not available for fixing the heights.

5. Mr. Rohlf's heights are based on boiling point observations.

The last column contains the heights obtained by former observers. d'Abadie obtained his results by careful trigonometrical measurements, and the other observers by barometrical observations. The agreement between the results obtained by Dr. Cook, d'Abadie, Feret, Galinier, and Rüppel appears very satisfactory.

CHAPTER XXXVI.

TRIGONOMETRICAL SURVEY.

Arrangements for despatch of survey party.

THE arrangements for the despatch of a Survey Party to accompany the Expedition were left to the Government of India.

The Surveyor-General of India, under instructions from the Government of India, reported for the information of the Government of Bombay, that, in conformity with the wishes of Sir Robert Napier, a Survey Party had been organized and equipped in concert with Lieutenant-Colonel Walker, Superintendent of the Great Trigonometrical Survey, to accompany the Expedition.

Instrumental equipment.

The instrumental equipment of the party was provided for at Mussoorie, and every arrangement made to ensure efficiency as well as to prevent delay or failure.

It was deemed advisable to employ native sappers and miners, as most fitted for the work, and the Bombay Government allowed some picked natives from the Bombay Sappers and Miners to be placed at the disposal of Lieutenant Carter for survey duty, as men from Bengal would, it was feared, be unsuited for service beyond sea, and their transit to the port of embarkation would likewise have been attended with serious delay.

Establishments.

About twenty-five tindals and callassies were obtained for the Survey Party at Poona, and freight was provided for the following strength:—three military officers, with horses and native servants; twenty native sappers; twenty-five tindals and callassies; stores, instruments, camp equipage, &c.

The Trigonometrical Survey Party in Abyssinia were placed under the Quartermaster-General's Department, and their proceedings have been constantly alluded to in the preceding pages, in the reports submitted to the Quartermaster-General, Horse Guards, by Captain Holland, Assistant Quartermaster-General.*

The following report by Lieutenant Carter will show the working of the Survey:—†

Report of Lieutenant Carter.

"The Survey Party sent from India to accompany the Abyssinian Expedition, with "the view of making a geographical survey "of the country through which the troops "marched, was comprised of the officers "named in the margin, and a party of "native carriers recruited partly from the "Himalayas and partly from the neighbour-"hood of Poonah, Bombay.

"The party was supplied with a large "equipment of first class instruments,

Officer in Charge.

Lieut. T. T. CARTER, R.E., Surveyor G. T. Survey of India.

Assistants.

Lieut. A. E. DUMMLER, R.E., Assistant Surveyor, G. T. Survey.

Lieut. T. H. HOLDICH, R.E., Assistant Surveyor, Topographical Survey.

* See pages 3, 19, 72, 86, 107.

† A map of the line of march of the Force, issued originally in five sheets, accompaniment to this report, will be found among the maps issued in a separate cover.

"including Theodolites, Transit Instrument, Chronometers, &c., as well as with smaller "instruments for reconnoitering; and all arrangements were made before leaving India, "in anticipation of our stay in the country being a protracted one, to enable us to collect "a large amount of geographical information, and to devote time to the work. But the "circumstances of the expedition prevented our going any considerable distance off the "line of march, and therefore our work has been restricted to a survey of the route "taken by the force, embracing, as far as Antalo, a breadth of country averaging 25 miles, "and beyond, of a less breadth, the country being more disturbed. It is, however, to "be hoped that the results of the survey operations will be considered valuable by "geographers, as verifying the observations of former travellers, and laying down an "important geographical feature, viz., the watershed of Upper Abyssinia. The plan of "operations suggested by Colonel Walker, R.E., Superintendent Great Trigonometrical "Survey of India, was to measure a base line near the coast, and carry on a regular "series of triangles along the line of country through which the troops passed; to "observe too, and fix by intersection a sufficient number of prominent peaks by means "of which to sketch in the topographical details of the country by the use of the Plane "table, the method of surveying adopted in the topographical surveys of India, per- "mitting the details of configuration of the country, the positions of towns and villages, "the courses of rivers, &c., to be noted more rapidly than by any other process. Instruments.

"We landed at Annesley Bay on the 8th of January, 1868; it was the 15th before "carriage was obtainable, when we marched to Kumayli and commenced operations by "measuring a base line of about three miles in length; observations were taken from "four stations, and a sufficient number of peaks fixed to enable the plane tabling of the "country between Annesley Bay and Senafè to be taken up by Lieutenant Holdich. Arrival.

"It soon became apparent that to carry on a continuous triangulation, to plane "table the country, and at the same time to keep pace with the force, was impossible. "To have done so would have entailed our encamping at considerable distances from, and "remaining away for days from, the permanent posts established along the line of march, "and would have necessitated our carrying more supplies than we had carriage for "(as nothing was obtainable from the inhabitants). Commencement of operations.

"The inhabitants were independent and suspicious, even to the head men attached "to us by the political officer, and they had the same opinion of a Surveyor as all other "uncivilized people in whose country I have worked, viz., as a person to be watched with "suspicion, and up to no good. In this light our friends the Shohos looked on us; they "were not good walkers, and decidedly objected to the amount of physical exertion "entailed by their accompanying us on our work. With us it was our object to reach "the highest peaks from which a good view of the surrounding country could be obtained, "with them to prevent our doing so. One day I was informed that the Sultan (I con- "jecture that this must have been some Egyptian official) had been in those parts, but "that he never showed any desire to go up these steep hills, and look about him with a "telescope as we did, and I inferred that they considered it objectionable our doing so. "I mention these circumstances as we were entirely dependent on these men for "guidance and information, especially in ascertaining the whereabouts of water, which "in these hills is exceedingly scarce, and only to be found where the natives have "scooped away in the beds of the ravines, thus obtaining a scanty supply for them- "selves and cattle; of these puddles they were naturally very jealous. These remarks "refer to the country between Senafè and the coast, and I mention them to show the "difficulty there would have been in carrying on a continuous triangulation in this part, "and the time it would probably have taken.

"Lieutenant Holdich has the credit of plane tabling this difficult piece of country, "under these unfavourable circumstances, and his report on the same is herewith attached "(Appendix A). Time and circumstances not permitting a continuous series of triangles "being carried on, and at the same time being unwilling to give up the method of survey- "ing by means of the plane table, the only plan that occurred to me was to measure base "lines at different points along the line of march, and from each of them to commence a "fresh set of triangles, and intersect and fix prominent peaks by which the plane table "might be worked. The geographical positions of the ends of these base lines were "determined by their being connected together by a traverse line, and thus referred to "the initial station at Mulkatto, Annesley Bay. Observations were taken at one end of "each base for latitude, and thus a check obtained on the position the traverse gave. "The bearing of each base line was determined by observations to ascertain the sun's "azimuth, and the angle between sun and referring mark. Lieutenant Dummler con- "nected the north end of the Kumayli base line with the west end of the Senafè base "(measured on a plain a little south of Senafè Camp); that there was no great dis- "crepancy in the traverse may be seen from the position it assigns to Senafé Camp. "By Traverse, latitude 14° 42′ 35″, longitude 39° 26′ 7″; by Observation, latitude "14° 42′ 33″, longitude 39° 26′ 1″.

"The latitude by observation is the result obtained by circum-meridian altitudes of "a pair of stars, one north and one south of the zenith; the longitude, the mean result "given by three chronometers rated at Bombay, and their error on Greenwich known.

Senafè base.

"The Senafé base was about three miles in length. Observations were taken from "six stations in its vicinity, and 24 points fixed; by means of these points the whole "of the country between latitude 15° and latitude 14°, as shown in Sheet No. 2, was "sketched (a most interesting portion of the highlands of Upper Abyssinia, being the "watershed), fixing the heads of the Agoritah, Hadàs, and Kumayli nullahs or ravines "which carry off the drainage to the Red Sea at Annesley Bay to the north; the "Maini, Baltu, Gaberta, &c., that drain into the Mareb to the west; the Mai Muna and "other streams that drain towards the Red Sea to the east; and the point where the "drainage begins to run southward, as shown by the Haussen and other smaller water- "courses south of Adigrat, which drain into the Takazze, and assist in causing the "sudden flooding of the Nile, mentioned by the traveller Sir Samuel Baker. I believe "that during the dry season the majority of these watercourses are dry, except where "the water of the previous rains has remained in some of the deeper pools, but that "immediately on the rain falling, about the beginning of June, they become considerable "sized streams.

Comparison of latitude and longitude of prominent mountains as taken by d'Abbadie and Trigonometrical Survey.

"The following prominent mountains fixed by other travellers come into Sheet "No. 2:—

"I have drawn out a list of comparisons between our results and those of "M. d'Abbadie, whose positions of the same have, I believe, been determined by triangu- "lation. M. d'Abbadie's geographical researches in this part of Abyssinia seem to have "been very great, and I have no doubt but that this comparison of results of a few "common points will be of interest to those who may read this Report.

"Mount Guddam (Gedem)	..	Latitude,	15°	2′	1″	Longitude,	39°	33′	23″
"Ditto. By d'Abbadie	..	„	15	24	42	„	39	34	37
"Mount Tuhuili	..	„	14	46	29	„	39	6	16
"Ditto. By d'Abbadie	..	„	14	46	21	„	39	7	22

" Mount Kisat	Latitude,	14	40	12	Longitude,	39	20 10
" Ditto. By d'Abbadie ..	„	14	40	7	„	39	21 15
" Mount Zéban Sifra (Gonda Gonda)	„	14	26	55	„	39	37 7
" Ditto. By d'Abbadie ..	„	14	26	35	„	39	38 35
" Mount Sargen (Dan Salla) ..	„	14	26	25	„	39	31 44
" Ditto. By d'Abbadie ..	„	14	26	1	„	39	33 2
" Mount Semiata	„	14	11	7	„	38	59 15
" Ditto. By d'Abbadie ..	„	14	11	0	„	39	0 58
" Mount Alé'qua	„	14	14	23	„	39	25 53
" Ditto. By d'Abbadie ..	„	14	13	48	„	39	27 6
" Mount Seora	„	14	44	22	„	39	31 18
" Ditto. By d'Abbadie ..	„	14	42	14	„	39	35 36

" This comparison shows that there can be no great error in the geographical positions " assigned to these hills; they all agree closely in latitude, and show a constant difference " of 1¼ minutes in longitude, with the exception of Seora. There are several other peaks " and positions common, but I have only noted these as being the most prominent. In " this Sheet No. 2 the positions of no less than 124 villages are fixed, the most important " being that of Adigrat; the position of our camp, some 30″ north of the village, was fixed " by plane tabling to be in latitude 14° 16′ 53″, longitude 39° 29′ 23″; the village by " D'Abbadie was determined to be in latitude 14° 16′ 0″, longitude 39° 29′ 30″; by " Ferret and Galinier, in latitude 14° 15′ 57″, longitude 39° 29′ 0″. Our latitude by astro- " nomical observations was 14° 16′ 62″. On the map, in addition to the names of the " villages, will be found the names of those portions of the ground on which they stand, " but I was unable to ascertain whether these divisions were for any fiscal purposes. The " word "midr" used to denote them meaning earth, soil. I may here mention that the " word "Adi," prefixed to several of the villages, denotes village in the Tigré language. " With reference to the geological structure of the portion of country shown on Sheet " No. 2, the valleys were metamorphic rocks, the out-cropping hills being sandstone, con- " taining a great deal of iron ore. The country for the most part was very bare of trees, " except in the neighbourhood of Halai, where there are some large forests of very fine " juniper trees. The plateau of Kohaito was also well wooded, and well stocked with " game. The natives seem to devote their attention more to the cattle, and keep their " land chiefly for pasturage; the crops met with were few, but wheat and barley seemed " to thrive where sown.

" The villages in these parts were mostly deserted, the inhabitants being attracted " to the different British camps, a sure market for labour—the people gladly bringing " their cattle to be used as beasts of burden.

" The donkeys of the country, which are very fine, were also greatly used for the " carriage of grain, &c., to the front.

" Sheet No. 3 contains that portion of the country, traversed by the force, that lies " between latitudes 14° and 13°. The character of the country is more undulating. It is " bare, and the soil is sandy, but produces large quantities of wheat and barley, judging " from the amount of grain brought in for sale at the different camps.

" The towns or villages of importance are Antalo and Chelikot. The position of the " latter had been determined by previous travellers:—

Position of Chelikot.

" In latitude—Ferret and Galinier made it		13° 21′ 51″	N.
„	Lefebvre „	13° 21′ 0″.	
„	Ourselves, by plane-table ..	13° 21′ 50″.	

Latitude of Antalo.

"At Antalo, the third base line was measured, and connected by traverse with the "Senafé base. The latitude of Camp Buyah, by traverse, from Adigrat, was 13° 14′ "9″; the astronomical observation gave latitude 13° 14′ 13″.

"The Antalo base was measured by Lieut. Dummler. Observations were only taken "from its ends—fixing the high range of hills bearing the names Fingallat, Mejjem, "and Garajam, which appears to be the southern boundary of Tigré. Lieut. Dummler "was not permitted to visit any of these hills, it not being considered safe that he should "do so, and he was therefore unable to extend the triangulation.

Antalo to Ashangi.

"From Antalo to Lake Ashangi, the route of the army lay through a more moun- "tainous and difficult country, held by robber chiefs, who were not to be trusted. No "officers were allowed to go off the line of march, and consequently the survey of this "portion of the country is much curtailed. Lieuts. Dummler and Holdich, who com- "pleted the survey of this portion of the route, found it necessary, on more than one "occasion, to take precautions to prevent their carriers being molested, which they "effectually did with the small native guard attached to them (10 men), the only casualty "being the loss of all their baggage mules, which were stolen one night.

"Having left Lieuts. Dummler and Holdich to complete the work up to Lake "Ashangi, I proceeded to re-commence from that point. It was the 26th of March by "the time I had measured the fourth or Ashangi base, and had fixed a sufficient number "of points to allow of my plane-tabling.

"By the 31st, I had traversed along the line of march, as far as Camp Marawah, and "had completed the sketching of the country between Ashangi and that point. From "Antalo the country had become very rough and mountainous, the route ascending and "descending ranges of about 10,000 feet in height, intersected by narrow valleys, such "as the Atsala, Aiba, &c., as far as Lake Ashangi, and then passing over the Womberat "and Duffat passes to Marawah. Notwithstanding these natural obstacles, the march of "the advancing column had been steady and continuous; and on reaching Marawah, I "learnt that, in a few days' time, the Commander-in-Chief would be before Magdāla, and "that time would not permit me to do more than carry on a theodolite traverse, leaving "the hill-sketching to be done on the return march.

Talanta Plateau.

"The traverse was completed up to the Talanta plateau by the 12th of April; on "the 13th. Magdāla was captured, and till the 18th I was employed in making a plan "of the position on a large scale, and in connecting my last traverse station on the Talanta "plateau with Magdāla and the neighbouring heights. The portion of the country "between Camp Marawah and the Bashilo river was only traversed by myself. The "topographical detail, as shown on the maps between these two points, is taken from "the Quartermaster-General's route survey, as I regret to say that my health had "suffered considerably from constant exposure and over-work, and I was consequently "unable to do any further work for a time.

Lasta.

"The return march of the force from Magdāla to the coast was hastened as much "as possible, as the rainy season was expected to commence in the latter end of May, and "no further opportunity occurred of extending the work. South of Lake Ashangi, up to "the Takazze, the route of the army lay through Lasta, a rich country, producing "wheat, barley, millet (Halcus Sorghum), or the Jarwar of India, dwarf beans, peas, and "different kinds of pulses, grown in India, as well as chena (Palicum Italicum), com- "monly called gram in India.

The Takazze.

"From the Takazze, the ascent is made to the Wadela plateau, an extensive pasture "ground, extending in a south-westerly direction for about 40 miles. Sheep and oxen "seemed to thrive very well on this high land, its elevation being more than 10,000 feet

"above the level of the sea. The most northerly part of the plateau is near Bethor. "The descent to the Djedda river and the ascent to the Talanta plateau, as well as the "subsequent descent to the Bashilo, are extremely precipitous; but fortunately a good "broad road had already been made from the edge of the Wadela plateau to Magdala "by King Theodore, for the transit of his heavy guns.

"The instrument used for determining the initial longitude at Malkatto was a "Troughton and Simms portable transit instrument, with a two-foot telescope. The "method of determination was that of Lunar transits Instruments described.

"The longitude of Senafe was determined by connecting it with the initial longitude "by traverse; it was also determined by the method of transportation of chronometers, "and the two results agree very fairly; but it is to be remembered that during the "transit of the chronometers from Bombay to Senafe, they had been stationary for the "greater time on board ship. Beyond Senafe I failed to obtain any satisfactory results. "The greatest care was taken in moving them; but the fact of their being moved daily, "combined, I believe, with change of temperature (the chronometers having been "received from the Calcutta Observatory, where they had probably been lying some "time), altered their rates.

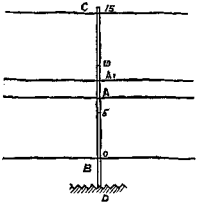
"Their rates, moreover, with one exception, were all large, viz., + 27·8″, − 5·3″, "−8·2″ + 1·0″.

"The first could not be expected to give any results, and the next two have two large "rates.

"For determination of longitude by this method, it is essential that the chronometers "should have a small rate, as, being small, it is more likely to be constant; further, the "number of chronometers should be considerable; and thirdly, the observer should be "able to halt occasionally at one place for at least a week, to re-rate his chronometers, which "the rapid nature of our march did not permit of our doing. Ours were ships' chrono- "meters. I think that perhaps small pocket chronometers, carried on the person, might "have given better results.

"In route-surveying of a rapid nature, embracing a large tract of country on either "side of the line of march, I think the method of plane-tabling, on points fixed trigono- "metrically, the best that can be adopted. It has, among other advantages, these,— "that the plan is made on the ground, and no field-book is required. It is only effectual "where the Surveyor can leave the route to visit commanding positions. The one great "qualification that a plane-tabler in a mountainous country should possess, is that of "being a good walker, as it is most essential that he should ascend the loftiest elevations "from which to obtain a good view of the surrounding country. He must, of course, be "a good draughtsman as well.

"The Traverse was made with a theodolite, having a micrometer fitted to the eye- "piece, enabling the observer to measure the number of revolutions of the screw-head "that a known height subtends,—the angular value of one revolution of the screw-head "having been previously determined.



"CD is a staff marked 0, 5, 10, 15 feet. The micrometer has one fixed wire, A, "and two moveable wires, B and C, attached to the screw-heads.

"In observing, the fixed wire is made to cross the staff at any point, A; and if a "15-feet subtense is being measured, the moveable wires B and C are made to coincide "with the marks on the staff at 0 and 15; and number of revolutions, 15 feet "subtends = rev. AC + rev. AB. In all cases, to prevent mistakes, a second reading was "taken, the fixed wire being made to cross the staff, say at A'; then 15 feet subtends "rev. A'C + rev. A'B; = rev. AC + rev. AB, if the observation has been made correctly.

"The computation is made very simply by means of a table showing the distance "in miles from the instrument to the staff corresponding to the number of revolutions "that 15 feet subtend; the 10 and 5 feet marks are necessary for short distances, and the "same table is used, by multiplying the revolutions by $\frac{2}{3}$ for a 10 feet staff, and multi-"plying by 3 if a 5 feet staff is observed to.

"At Kumayli, where the base line was measured on ground cut up with numerous and "wide ravines, this instrument was used; its accuracy was tested on several occasions, "where the ground permitted it, by running a couple of perambulators over the same "ground, the comparative results agreeing to the third place of decimals of miles.

"This instrument has been introduced by Colonel Walker, R.E., Superintendent, "Great Trigonometrical Survey of India, for mountain route surveying, or traversing "over raviney and marshy ground; in the former case it is particularly useful in enabling "the surveyor to avoid all the small bends at which the instrument would have to be "put up where measurement has to be made with chain or perambulators.

"In all cases the angle of elevation or depression to the staff were taken, and our "distances have been reduced to the horizontal plane.

"The whole of our traverse from Annesley Bay to Magdála has been computed out "by General Boilean's tables of latitude and departure; the latitude and longitude of "points along the route at distances of about a mile apart worked out, and these plotted "on the graticuled sheets.

"I think this is a better method of plotting a long route, for a small scale map, than "plotting the traverse on a large scale, and reducing it by squares or any other method.

"The whole of our observations have been reduced by myself, assisted by Lieutenant, "Dummler and Holdich, at the office of the Director, Topographical Department, War "Office, where we have received every assistance, for which I beg to thank the Director "Colonel Sir Henry James, R.E., F.R.S., Lieutenant-Colonel Cooke, C.B., R.E., the "Superintending Officer, and Captain Bailey, R.N., by whom the projections were made.

"The hill drawing on the fair maps was done by Lieutenant Holdich, R.E., and "they were prepared on the scale of two miles to the inch, with the view to reduction "to the scale of four miles to the inch, which was done at the office of the Ordnance "Survey, Southampton, Colonel Sir Henry James, R.E., Director.

"I would beg to record my thanks to Major Darrah, of the Royal Engineers, who "kindly assisted Lieutenant Holdich in taking the observations on which our initial "longitude at Mulkatto, Annesley Bay, depends, which were taken after Lieutenant "Dummler and myself had left for England.

"Corporal Rhodes, of the Royal Engineers, a very intelligent non-commissioned "officer, assisted me in the traverse between Lake Ashangi and Magdāla, and made "himself generally useful while attached to the survey party. I am sorry to say that the "health of my assistants as well as my own suffered considerably from the exertions we "had to make in surveying so much of the country as is shown in the accompanying "maps. We felt our time was limited, and it was only by continuous application to the "work that we have been able to complete the survey of as much of the country as we "have done; I only regret that circumstances did not permit of our doing more.

"In addition to Lieutenant Holdich's report on the country between Senafè and "Annesley Bay, I have appended hereto the following:—

"1. A list of points fixed by triangulation, with their latitudes, longitudes, and "heights (Appendix B).

"2. Observations for latitude, showing resulting latitudes (Appendix C).

"3. Observations for longitude, showing resulting longitudes (Appendix D).

"4. Observations to determine sun's bearing at different base lines, with resulting "bearing (Appendix E).

"5. A list of time observations, showing chronometer errors deduced (Appendix F).

"6. A list of places and positions determined by traverse (Appendix G).

"7. A list showing boiling point observations, with resulting heights (Appendix H).

"In conclusion, I have to return my thanks to my assistants Lieutenants Dummler "and Holdich, of the Royal Engineers, for their cordial co-operation in carrying out the "work on which we have been engaged."

APPENDIX A.

THE following is a General Report by Lieutenant Holdich on the country bordering the route from Zula to Senafé :—

General description.

THE low country between the shores of Annesley Bay and the foot of the ranges of hills which terminate the Abyssinian plateau on the east and north, is a dry, sandy track of partially cultivated ground, which is unwatered during the dry season, when it is subject to the influence of perpetual sand-drifts, and the withering effects of a sun only temporarily clouded by the sand thus raised by the monsoon. At this time of the year it is apparently deserted by the Shoho agriculturists, although traces of their labours are visible everywhere; and it seems probable that during the rains large crops are raised in various parts of the district, particularly in the country south-west of the Gaddam Hills. In the presence of the British force, the cultivation of the ground hereabouts was entirely suspended; and information on this subject was very scantily obtained from the inhabitants. Rain is expected over this country during the months of February, March, and part of April; but these rains appear to be local, and extend from the coast line to a line of about 5,000 feet elevation in the hills, above which they cease. The rainy season commences in the high lands, or plateau, about the beginning of June; and it is during this month that the first torrents generally come down the ravines, and fill the Hadàs and Kumayli rivers, and the beds of the smaller streams in their neighbourhood. Under their influence the country gradually becomes covered with luxuriant grass and rank jungle. The Shoho agriculturists come out from the ravines and rocks of the lower hills to pasture their cattle, and take possession of the scattered villages, of which the only remnants during the dry season are a few badly built stick huts. There is no indication of much trade amongst these people, and they seem to ignore the art of fishing, although they live on the shores of a sea abounding with fish.

Cultivation, &c.

Rainy seasons.

Water supply.

Water probably exists below the surface of the beds of most of the nullahs, and the appliances of the British forces brought it to the surface almost whenever it was needed; but native wells are uncommon, and, except at Futteh, where there are hot springs, the advantage of a permanent supply seems to be unknown. The fact that the natural disadvantages of climate and position are many, and the advantages few, may be inferred from the heap of ruins which now stand for Adulis.

People of the country.

There are five tribes of Shohos (who are all Mahommedans), who at present seem bound, by the ties of peace and common interest, into something like a permanent alliance. These are the Asakari, Asalesan, Ben-Farakatu, Ben-Elelish; and Fakat-barak tribes. The boundaries of their respective provinces are very indefinite: indeed two of them, the Asakari and Asalesan, occupy a hill region a little north of Senafé in common. At present these tribes appear to be banded together in order to hold their own against the Tigré people of the plateau, who are Christians, and consequently their bitter foes. For this frontier service they receive the protection of the Egyptian Government.

Geological features.

Geologically, the whole of this country is volcanic. At Eiromali, a small hill on the extension of the southern spur of the Gedem Hills, there are very distinct traces of recent eruption. The water below the surface of the ground is invariably warm, as at Kumayli and Futteh; and there is a report of a volcano existing in constant activity somewhere in a position south of Futteh, about three days' march towards the salt plains. The hills between the Kumayli and Hadàs, and on either side the water, are almost invariably of a trap formation; and their peculiar, horizontal, laminated structure gives them a remarkably rugged and sharp outline, which is, I believe, seen only in the country of Abyssinia. In the beds of the nullahs are large blocks of schist, and of what appears to be granite. Sandstone is here and there found above the trap in the neighbourhood of Senafé, and in the ridge east of the Makarra stream.

Villages.

Villages in all this district are few and far between. The people live in the plains only part

of the year; and when they retreat to the hills for water and pasture, they seem to dispense with all artificial habitations, and betake themselves to holes in the cliffs, and caves in the dry beds of the ravines, from whence they only emerge when washed out by the rains. Such houses as there are, are built of sticks and grass in a circular fashion, and stand about 8 feet high, and 10 or 12 feet wide. Sometimes there is an attempt at a roof; more generally the boughs of which they are composed are bent inwards and tied together at the top. The places where water may be found during the whole year are kept as carefully secret as possible; but there is no doubt that in the lower hills, in the beds of the ravines as they leave the hills, there are plenty of them. In the dry weather the people of the surrounding district collect and camp in the neighbourhood of these water supplies; and they are visited too by herds of wild animals which exist in the hills, and which come down at night to drink.

Wild animals, game, &c.

Elephants frequent the hills east of the Kumayli route in considerable numbers; their tracks are constant, but they are always on the move during the dry season, and between midnight and daybreak travel many miles through the jungle to and from their watering places. Like all other gregarious animals, in the rains they probably leave the hills for pasture in the plains. Lions make themselves occasionally heard amongst the hyenas at night, but their tracks are rare. They are not common in Tigré, or this part of the country. Five varieties of antelope are common here, including the Koodoo, a magnificent dun-coloured animal, standing 14 or 15 hands high; and the Beu-Israel, a small antelope about as big as a large hare, which drops to the smallest-sized shot. Hares are not so common, and are much smaller than the hill variety. Two species of guinea fowl and the common spur fowl are found everywhere. The most prominent and noisy of all the monkey species, viz., the dog-faced baboons, wander in countless numbers over all this region, and everywhere make themselves as conspicuous as possible.

Routes to the Plateau.

There are three routes to the Abyssinian plateau from the coast of Annesley Bay. The route of the Hadàs river, which was reconnoitred previous to the campaign, is the most westerly. It is undoubtedly the *longest*, but it is the most generally adopted, as it affords a good supply of water all the year round. No road has been made in this ravine for the greater part of the distance. The ascent to Takonda was partly rendered traversable for military purposes, but is probably now in its original impassable condition again. The route *viâ* Kumayli was the one adopted for the ascent and descent of the British forces. This route follows the bed of a nullah for the whole distance. Water was plentiful at Kumayli, Sooroo, and Rahaguddy. Wells were made at a place called Maian, in the neighbourhood of Undul. This route has probably also resumed its primitive condition of difficulty by the action of the last rains. A third route exists which would be practicable when the two former were flooded, which is at all seasons open to native traffic, but which probably presents more natural difficulties to road-making than either. Its one advantage is its probable passability when the Kumayli and Hadàs ravines are full of water. This route extends across the plains from Malkatto to the hot springs at Futteh; thence to a point where water is always procurable at Imtahàgu, over the easternmost ridges into the Makarra stream. This part of the route is comparatively easy. Beyond this it follows up the bed of the Makarra, which is here broad and open, and presents no appearance of the effects of a torrent during the rains, to the eastern foot of the Maruglu range, which is in occupation of the Fakat-harak, and Bethasaba tribes. The Maruglu pass is steep and difficult, but from the Maruglu range it is said to be possible to reach Sanafé without descending into the Kumayli pass. The easier route, however, is by a small stream called the Garadaf, into a narrow, open plain in the pass, about a mile and a half above Undul wells; and thence by Rahaguddy to the plateau at Sanafé, or by the village of Undul to Takonda.

Synopsis of points fixed by triangulation.

APPENDIX B.

SYNOPSIS of Points fixed by Triangulation.

No.	Fixed Station. A.	Deduced Station. B.	Log. Distance in feet. A to B.	At A, Azimuth of B.	Latitude of B.	Longitude of B.	Height above Sea, of B.	Remarks.
				° ′ ″	° ′ ″	° ′ ″		
1	North end Kumayli Base	.. ..	..	..	15 13 38	39 55 44	100	Latitude and longitude of north end of Kumayli Base, referred to Initial point at Malkatte; Height from spirit-level observations. Azimuths reckoned from S. round by W. S. = 0°, W. = 90°, N. = 180°, E. = 270°.
2	,, ,, ..	South end Kumayli Base ..	4·1878026	322 8 25	15 11 27	39 37 20	74	
3	,, ,, ..	Alumte, H. S.	4·6098712	354 34 26	15 6 46	39 36 23	2,803	
4	,, ,, ..	Kumayli, H. S.	4·3231449	65 7 22	15 12 0	39 32 29	1,499	
5	,, ,, ..	Imaru, H. S.	4·7342412	10 21 59	15 4 39	39 34 4	..	
6	,, ,, ..	Urug, H. S.	4·9760855	85 5 25	15 12 7	39 19 40	7,940	
7	,, ,, ..	Guddam, H. S.	4·8232601	168 4 11	15 24 14	39 33 23	..	
8	,, ,, ..	,, No. 2, H. S. ..	4·7709404	175 27 19	15 23 11	39 34 56	..	
9	,, ,, ..	Peak, S.W. of Annesley Bay	5·0165180	309 36 28	15 2 31	39 49 20	..	
10	Alumte	Hawa, H. S.	4·6295437	213 37 7	15 12 38	39 40 24	..	
11	,, ...	Abalu, H. S.	4·7835977	95 51 22	15 7 44	39 26 34	7,610	
12	South end Kumayli Base	Futteh, H. S.	4·4774868	325 58 0	15 7 20	39 40 12	..	
13	,, ,, ..	Girgru, H. S.	4·7384497	52 44 8	15 5 58	39 29 55	..	
14	,, ,, ..	Farum, H. S.	4·9060865	48 49 47	15 2 41	39 27 1	8,085	
15	,, ,, ..	Guddam, No. 1, H. S. ..	4·8922905	164 14 13	15 23 52	39 33 43	2,750	
16	West end Sanafé Base ..	.. ..	..	..	14 41 2	39 25 6	7,580	Position of West end of Sanafé Base, determined by traverse connection with Kumayli Base, checked by astronomical observations; height by boiling thermometers.
17	,, ,, ..	East end Sanafé Base ..	4·1643826	293 11 54	14 40 5	39 27 23	7,663	
18	,, ,, ..	Shimazana, H. S.	4·5511855	317 6 29	14 36 43	39 29 13	8,635	
19	,, ,, ..	Marara, H. S.	4·3879771	355 58 10	14 37 26	39 25 22	8,208	
20	,, ,, ..	Seora, H. S.	4·6193949	241 1 4	14 44 32	39 31 18	9,550	
21	,, ,, ..	Ad. Hazu, H. S.	4·9368360	273 42 38	14 40 6	39 39 45	8,976	
22	,, ,, ..	Ouda, H. S.	4·7630267	282 31 24	14 38 57	39 34 43	..	
23	East end ,, ..	Kisat, H. S.	4·6284043	90 59 33	14 40 12	39 20 10	8,680	
24	Shimazana, H. S. ..	Akub Terika, H. S. ..	4·6762577	155 29 47	14 43 51	39 25 52	..	
25	,, ...	Zeben Zifra, H. S.	4·8774270	321 50 41	14 26 55	39 37 7	10,314	
26	,, ...	Sargen, H. S.	4·8066434	346 36 24	14 26 25	39 31 44	9,204	
27	,, ...	Abalu, H. S.	5·1729645	15 36 25	14 13 0	39 22 26	..	
28	,, ...	Focada, H. S.	4·9091890	26 2 16	14 24 42	39 23 6	8,979	
29	,, ...	Maimarat	4·8594414	40 27 41	14 27 37	39 21 15	..	
30	,, ...	Gundet, No. 1	5·3565017	85 36 15	14 33 47	38 50 46	6,145	

Synopsis of Points fixed by Triangulation—*continued.*

No.	Fixed Station. A.	Deduced Station. B.	Log. Distance in feet. A to B.	At A, Azimuth of B.	Latitude of B.	Longitude of B.	Height above Sea, of B.	Remarks.
31	Shimazana, H. S. ..	*Gundet*, No. 2, H. S. ..	5·3744644	° ′ ″ 89 38 49	° ′ ″ 14 36 25	° ′ ″ 38 49 1	..	
32	,, ...	Adbalu, H. S.	5·1024111	56 20 22	14 25 6	39 11 12	..	
33	Akub Terika, H. S. ..	Halai, No. 1, H. S. ..	4·9456898	154 58 42	14 57 4	39 19 31	..	Latitude and longitude of East end of Antalo Base determined by traverse connecting it with Sanafé Base. Position verified by astronomical observations; height by boiling thermometer.
34	,, ..	Sa-asa, H. S.	5·0524637	157 33 48	15 1 6	39 18 33	8,710	
35	,, ..	Tahaili, H. S.	5·0662772	97 53 14	14 46 29	39 6 16	6,385	
36	Merara, H. S.	Aléqua, No. 1, H. S.	5·1445817	358 43 47	14 14 23	39 25 53	10,392	
37	,, ...	,, No. 2, H. S. ..	5·1174611	1 43 47	14 15 47	39 24 42	10,191	
38	Seora, H. S. . ..	Tsaro, H. S.	4·9035113	156 39 25	14 56 31	39 25 54	9,048	
39	,, ...	Bakhna, H. S.	5·1338589	165 27 47	15 5 38	39 20 4	..	
40	East end Antalo Base ..	.. .. ..	..	..	13 15 19	39 35 48	6,778	
41	,, ,, ..	West end Antalo Base ..	4·1556673	112 51 12	13 16 14	39 33 35	6,500	
42	West end ,, ..	Garajam, H. S.	4·8259388	316 4 54	13 8 15	39 41 25	8,652	
43	,, ,, ..	Alaji, H. S..	5·0216917	345 29 38	12 59 25	39 38 1	10,798	
44	,, ,, ..	Fingalat, H. S.	4·7363868	34 4 29	13 8 46	39 28 26	8,010	
45	,, ,, ..	Mejjen, H. S.	4·7343595	4 53 18	13 7 18	39 32 48	9,190	
46	Akub Terika, H. S. ..	Aroma Vil., H. S.	4·6534482	120 40 23	14 47 39	39 19 18	7,497	
47	West end Ashangi Base ..	.. .. ..	..	..	12 37 6	39 39 3	..	Position of West end Ashangi Base, fixed by traverse.
48	,, ,, ..	East end Ashangi Base ..	4·1969522	235 8 3	12 38 35	39 41 13	7,912	
49	,, ,, ..	Ashangi, H. S.	4·0880410	263 58 29	12 37 19	39 41 6	8,737	
50	Ashangi, H. S.	,, No. 1	4·4859126	66 42 33	12 35 19	39 36 22	..	These points are on the ridge on western side of Lake Ashangi. Denoted on maps by H. S. only.
51	,, ...	,, ,, 2	4·3158056	90 54 32	12 37 22	39 37 37	..	
52	,, ...	,, ,, 3	4·3924077	117 38 27	12 39 13	39 37 25	..	
53	West end Ashangi Base .	Makaré, No. 1	4·3556943	307 39 17	12 34 49	39 42 4	..	These points are on the ridge on eastern side of Lake, called Makaré. Denoted on maps by H. S. only.
54	,, ,, ..	,, ,, 2	4·3789047	314 59 30	12 34 18	39 41 54	..	
55	Ashangi, H. S.	,, ,, 3	4·3417042	353 30 13	12 33 48	39 41 31	..	
56	,, ...	,, ,, 4	4·4556112	356 55 27	12 32 36	39 41 21	..	
57	West end Ashangi Base .	,, ,, 5	4·4103097	331 46 52	12 33 21	39 41 6	..	
58	,, ,, ..	,, ,, 6	4·3206276	341 0 0	12 33 46	39 40 13	..	
59	Ashangi, H. S.	,, ,, 7	4·3873094	27 27 28	12 33 44	39 39 12	..	

APPENDIX B—*continued.*

Synopsis of Points fixed by Triangulation—*continued.*

No.	Fixed Station. A.	Deduced Station. B.	Log. Distance in feet. A to B.	At A, Azimuth of B.	Latitude of B.	Longitude of B.	Height above Sea, of B.	Remarks.
				° ′ ″	° ′ ″	° ′ ″		
60	West end Ashangi Base	Point No. 1..	4·4387030	12 57 17	12 32 41	39 38 1	..	Points on ridge south of Lake
61	„ „ „ ..	„ „ 2..	4·2991097	21 4 34	12 34 2	39 37 50	9,815	
62	Ashangi, H. S.	Tsolog, H. S.	4·7014991	49 1 8	12 31 52	39 34 42	10,890	
63	East end Ashangi Base ..	Point *a*	4·7791377	23 52 4	12 29 30	39 37 7	10,310	No name.
64	Ashangi, H. S.	„ *f*	4·7568849	9 45 57	12 28 1	39 39 28	..	Do.
65	„	„ *g*	4·8491335	18 16 28	12 26 14	39 37 22	10,370	On the Duffat Range.
66	Talanta, H. S.	.. .. ..	.. ..	..	11 28 2	39 17 11	..	This point fixed by traverse.
67	„	Selassie, H. S.	4·6686829	306 53 35	11 23 25	39 23 26	9,160	
68	„	Falah, H. S...	4·6554593	313 9 21	11 22 56	39 22 43	8,829	
69	Falah, H. S.	Point A	3·8386931	251 15 18	11 23 19	39 23 49	..	
70	„	„ B	3·9596770	269 13 18	11 22 57	39 24 15	..	
71	Selassie, H. S.	„ C (Gombagé Spur) ..	4·4079128	120 46 42	11 25 35	39 19 45	7,390	
72	„	Commander-in-Chief's Camp	4·1481700	83 34 49	11 23 10	39 21 7	..	
73	Falah, H. S.	Tree on Arogi Plateau ..	4·1403370	118 46 18	11 24 2	39 20 41	..	
74	B., H. S.	S 2	4·2836164	190 19 5	11 26 5	39 24 49	..	These points on range east of Menjara Ravine.
75	„	S 1	4·3119752	240 16 40	11 24 38	39 27 14	..	
76	Falah, H.S.	Low point on Selassie ..	3·8049029	243 43 25	11 23 24	39 23 41	..	
77	„	Magdala	3·9914830	273 16 18	11 22 50	39 24 22	9,190	King's House.
78	Selassie, H. S.	H. S. (across Kalkulla R.), ..	4·3168470	349 13 59	11 20 3	39 24 5	..	
79	Falah, H. S.	Selassie, H. S., No. 1 ..	3·7056345	209 58 15	11 23 40	39 23 9	..	
80	„	„ „ 2 ..	3·4258043	243 30 53	11 23 8	39 23 7	..	
81	Selassie, H.S.	Point *d*	4·2221106	139 54 19	11 25 32	39 21 38	..	This point on ridge east of Arogi Ravine.

APPENDIX C.

CIRCUM-MERIDIAN Observations for Latitude.

Circum-meridian observations for latitude.

Deduction No. 1.—Malkatto.

No. of Chronometer.	Object Observed.	Face.	Altitude.	Time of Observation.	Barometer.	Thermometer.	Clock Error.	Date.	Resulting Latitude.
			° ′ ″	H. M. S.					
3381, Sidereal.	α^3 Centauri.	L.	14 30 23	17 22 18	30	75 F.	Fast, 2h. 54m. 52s.	June 5, 1868.	15° 15′ 32·4″.
		R.	14 30 25	17 26 53					
		R.	14 30 10	17 29 7					
		L.	14 30 1	17 32 13					

Deduction No. 2.—East End, Kumayli Base.

278, Mean Time.	Sun's Lower Limb.	R.	54 53 8	2 30 54	29·5	70 F.	Fast, 2h. 36m. 39·6s.	January 24, 1868.	15° 13′ 22·8″.
		L.	55 3 20	2 36 27					
		L.	55 8 24·5	2 41 15					
		R.	55 10 15·0	2 46 42					
		R.	55 10 58·0	2 49 16					
		L.	55 10 38·0	2 52 58					
		L.	55 7 19·0	2 58 11					
		R.	55 3 27·0	3 0 40					
		R.	54 54 4·5	3 6 46					
		L.	54 49 24·5	3 9 37					

Deduction No. 3.—Senafé Camp.

3353, Mean Time.	ϵ Canis Majoris.	L.	46 30 27·3	6 12 48	22·2	55 F.	Slow, 3h. 16m. 45s.	January 12, 1868.	14° 42′ 39·9″.
		R.	47 31 47·3	6 17 16					
		R.	47 30 27·3	6 19 25					
		L.	49 6 22·3	6 22 59					

Deduction No. 4.—Senafé Camp.

3353, Mean Time.	ζ Ursæ Majoris.	L.	56 8 47·5	8 10 56	22·2	55 F.	Slow, 3h. 16m. 45s.	January 12, 1868.	14° 42′ 26·6″
		R.	56 1 12·5	8 19 6					
		R.	55 58 7·5	8 21 34					
		L.	55 51 15·0	8 27 6·5					

Deduction No. 5.—West End, Senafé Base.

3353, Mean Time.	Sun's Upper Limb.	L.	60 21 47·5	9 5 56	22·0	55·0	Slow, 3h. 16m. 16·6s.	February 8, 1868.	14° 40′ 58·0″.
		L.	60 15 27·5	9 11 26					
		R.	60 12 15·0	9 13 40					
		R.	60 7 32·5	9 16 5					
		L.	59 40 47·5	9 25 27					

Deduction No. 6.—Antalo.

No. of Chronometer.	Object Observed.	Face.	Altitude.	Time of Observation.	Barometer.	Thermometer.	Clock Error.	Date.	Resulting Latitude.
			° ′ ″	H. M. S.					
3353, Mean Time.	β Geminorum.	L.	74 43 5·0	4 22 50	23·5	75·0	Slow, 3h. 18m. 49s.	March 18, 1868.	13° 14′ 12·8″.
		R.	74 52 45·0	4 27 23					
		R.	74 54 57·5	4 33 42					
		L.	74 49 55·0	4 37 26					
		R.	74 33 51·0	4 46 16					
		R.	74 21 46·0	4 49 52·5					
		L.	74 8 11·0	4 52 37·0					

Latitudes deduced from Altitude of *a* Polaris.

No. of Chronometer.	Date.	Place.	Altitude.	Sidereal Time of Observation.	Barometer.	Thermometer	Latitude.
			° ′ ″	H. M. S.	Inch.	° Fahr.	° ′ ″
Sidereal.							
3353	June 5	Malkatto	14 1 5	14 33 39·7	30	80	15 15 58·5
278	Jan. 24	N.E. Kumayti Base	15 54 38	5 20 12·0	29·5	70	15 13 1·0
3353	Feb. 11	W.E. Senafe Base	15 7 46	6 2 44	22·2	55	14 41 5·0
Watch	Mar. 1	Halai	15 10 22	6 47 32·5	22·5	55	14 59 45·0
Watch	Mar. 12	Adigrat	14 32 9·5	6 36 5·2	22·5	60	14 17 2·0
3353	Mar. 18	Antalo	12 41 34·3	8 51 41·3	23·5	75	13 14 27·0

The latitude of Antalo was also determined by Lieut. Holdich, R.E.—from three observations to stars on meridian—to be 13° 14′ 4·5″.

The latitude of Aslangi was determined by Lieut. Holdich, R.E.—from four observations to stars on meridian—to be 12° 36′ 41·8″.

SYNOPSIS of Observations for Longitude at Malkatto, taken with 2′ Transit Instrument, by Troughton & Simons. Chronometer Sidereal, No. 3381, Parkinson & Frodsham. Approximate Latitude, 15° 13′ 0″ N. Approximate Longitude, 39° 40′ 0″ E. Approximate Clock Error, Fast 2 h. 55 m. 0 s., 1868.

Date and Limb.	Ill. Pivot.	Azimuth Error.	Level Error.	Transits Observed for Azimuth and Clock Error.							Mean Clock Error.	Moon's Observed Transit.	Moon's R. A. at Passage.	Longitude.
June 1st, 1868 ...	E.	+2′ 48·22″	−2·4″	h. m. s. Polaris S.P. 15 57 48·12	h. m. s. β Ursæ Minoris. 17 46 25·2	h. m. s. σ Virginis. 18 12 48·06	h. m. s. λ² Virginis. 16 19 41·26	h. m. s. κ Virginis. 17 0 26·24	h. m. s. λ Virginis. 17 6 32·48	h. m. s. α² Centauri. 17 24 58·6	h. m. s. 2 54 35·25	h. m. s. 16 49 6·18	h. m. s. 13 54 33·08	h. m. s. 2 38 50·41
June 2nd, 1868 ...	W.	−42·7″	−3·0″	Polaris S.P. 16 6 14·4	η Ursæ Majoris. 16 37 2·1	κ Virginis. 17 0 26·14	λ Virginis. 17 6 42·94	α¹ Centauri. 17 25 27·06	ξ Libræ. 16 15 54·18	γ Libræ. 16 23 54·2	2 54 37·04	17 41 54·24	14 47 11·27	2 38 45·97
June 3rd, 1868 ...	E.	+3·1″	−2·2″	β Ursæ Minoris. 17 46 2·2	β Libræ. 15 4 44·7	ξ Libræ. 16 15 39·56	ξ Ursæ Minoris. 16 43 49·06	ν Scorpii 16 59 10·14	ψ Ophiuchi. 19 11 13·38	σ Tyrannii Australis. 19 23 23·24	2 54 46·66	18 35 4·88	15 40 16·24	2 38 52·47
June 4th, 1868 ...	W	+3·6″	−1·6″	ξ Ursæ Minoris. 16 43 50·9	β² Scorpii 16 52 41·23	ν Scorpii 16 59 14·9	ψ Ophiuchi 19 11 16·30	κ Ophiuchi 19 46 21·0	θ Ophiuchi. 20 8 49·3	...	2 54 51·8	19 23 45·42	16 33 52·24	2 38 58·66
June 5th, 1868 ...	E.	−15·1″	−6·3″	μ Sagittarii 21 0 52·63	θ Ophiuchi 20 8 54·8	21 Sagittarii 21 12 29·3	α Lyræ 21 27 28·86	...	...	...	2 54 51·97	20 24 55·22	17 29 37·24	2 39 15·13

These Observations were taken by Captain Darrah, R. E., and Lieut. Holdich, R.E. ... { Mean 2 38 56·25 = Long. E. 39° 44′ 3·75

APPENDIX D—*continued.*

LONGITUDE of Camp Senafé by Chronometers.

		Objects Observed.				Means in Time.	Means in Space.	General Mean.	Remarks.
		Castor, Feb. 6.	α Ceti, Feb. 6.	α Leonis, Feb. 8.	α Ceti, Feb. 8.				
Chronometer 2333.	Chronometer error on Dec. 27, 1867..	0 34 53·2	0 34 53·2	0 34 53·2	0 34 53·2				
	Increase for interval due to −5·3 s. rate	−0 3 37·3	0 3 37·3	0 3 47·9	0 3 47·9				
	Chronometer error at time of observation	0 38 30·5	0 38 30·5	0 38 41·1	0 38 41·1				
	Chronometer time of observation ..	5 12 2·6	6 18 28·3	5 26 34·6	5 50 8·1				
	Greenwich mean time of observation .	5 50 33·1	6 56 58·8	6 5 15·7	6 28 49·2				
	Local mean time of observation ..	8 28 23·7	9 34 49·7	8 43 8·6	9 6 46·8				
	Differential longitude East	2 37 50·6	2 37 50·9	2 37 52·9	2 37 57·1	2 37 52·9	39 28 14		
Chronometer 2566.	Chronometer error on Dec. 27, 1867..	+5 54 23·7	5 54 23·7	5 54 23·7	5 54 23·7				
	Increase for interval due to +1 s. rate	+0 0 41·0	+0 0 41·0	+0 0 48·0	+0 0 48·0				
	Chronometer error at time of observation	5 55 9·7	5 55 9·7	5 55 11·7	5 55 11·7				
	Chronometer time of observation ..	11 45 38·6	12 51 59·3	12 0 16·6	12 23 50·1				
	Greenwich mean time of observation .	5 50 23·9	6 56 49·6	6 5 4·9	6 28 38·4				
	Local mean time of observation ..	8 28 23·7	9 34 49·7	8 43 8·6	9 6 46·3				
	Differential longitude East	2 37 59·8	2 38 0·1	2 38 3·7	2 38 7·9	2 37 62·9	39 30 44		
Chronometer 1582.	Chronometer error on Dec. 27, 1867.	−2 35 40·	2 35 40	2 35 40	2 35 40·				
	Increase for interval due to −3·2 s. rate	0 5 36·2	0 5 36·2	0 5 36·2	0 5 36·2				
	Chronometer error at time of observation	2 41 16·2	2 41 16·2	2 41 32·6	2 41 32·6				
	Chronometer time of observation ..	3 9 29·6	4 15 55·3	3 24 2·6	3 47 36·1				
	Greenwich mean time of observation .	5 50 45·8	6 57 11·5	6 5 35·2	6 29 8·7				
	Local mean time of observation ..	8 28 23·7	9 34 49·7	8 43 8·6	9 6 46·8				
	Differential longitude East	2 37 37·9	2 37 38·2	2 37 33·4	2 37 37·6	2 37 36·8	39 24 12	39 27 43·8	

APPENDIX D—*continued.*

Longitude of Camp Senafé by Chronometers—*continued.*

		Objects Observed, and Dates.				Means in Time	Means in Space.	General Mean.
		α Leonis, Feb. 12, 1868.	α Ceti, Feb. 12, 1868.	α Leonis, Feb. 13, 1868.	α Leonis, Feb. 14, 1868.	α Ceti, Feb. 14, 1868.			
Chronometer 3385.	Chronometer error on Dec. 27, 1867..	−0 34 53·2	−0 34 53·2	0 34 53·2	0 34 53·2	0 34 53·2			
	Increase for interval—5·3 s. rate ..	0 4 9·1	0 4 9·1	0 4 14·4	0 4 19·7	0 4 19·7			
	Chronometer error at time of observation	0 39 2·3	0 39 2·3	0 39 7·6	0 39 12·9	0 39 12·9			
	Chronometer time of observation ..	5 19 53·0	5 55 6·0	5 25 17·1	5 15 39·1	6 34 38·3			
	Greenwich mean time of observation..	5 55 54·3	6 34 8·3	6 4 24·7	5 54 52·0	7 13 51·2			
	Local mean time of observation ..	8 36 38·0	9 11 50·5	8 42 5·4	8 32 34·4	9 51 37·5			
	Differential longitude from Greenwich	2 37 43·7	2 37 42·2	2 37 40·7	2 37 42·4	2 37 43·3	2 37 43·1	39 25 46	
Chronometer 2956.	Chronometer error on Dec. 27, 1867..	+5 54 28·7	5 54 28·7	5 54 28·7	5 54 28·7	5 54 28·7			
	Increase due to + 1·0 s. rate.. ..	0 0 47·0	0 0 47·0	0 0 48·0	0 0 49·0	0 0 49·0			
	Chronometer error at time of observation	5 55 15·7	5 55 15·7	5 55 16·7	5 55 17·7	5 55 17·7			
	Chronometer time of observation ..	11 54 8·0	12 29 17·0	11 59 33·1	11 50 1·8	13 9 0·8			
	Greenwich mean time of observation..	5 58 47·3	6 34 1·8	6 4 16·4	5 54 43·9	7 13 43·1			
	Local mean time of observation ..	8 36 38·0	9 11 50·5	8 42 5·4	8 32 34·4	9 51 37·5			
	Differential longitude from Greenwich	2 37 50·7	2 37 49·2	2 37 49·0	2 37 50·5	2 37 54·4	2 37 50·8	39 27 42	
Chronometer 1582.	Chronometer error on Dec. 27, 1867..	−2 35 40·0	2 35 40·0	2 35 40·0	2 35 40·0	2 35 40·0			
	Increase due to − 8·2 s. rate	0 6 25·4	0 6 25·4	0 6 33·6	0 6 41·8	0 6 41·8			
	Chronometer error at time of observation	2 42 5·4	2 42 5·4	2 42 12·6	2 42 21·8	2 42 21·8			
	Chronometer time of observation ..	3 17 9·5	3 52 23·5	3 22 32·1	3 12 53·6	4 31 51·8			
	Greenwich mean time of observation .	5 59 14·9	6 34 28·9	6 4 45·7	5 55 14·4	7 14 13·6			
	Local mean time of observation ..	8 36 38·0	9 11 50·5	8 42 5·4	8 32 34·4	9 51 37·5			
	Differential longitude from Greenwich	2 37 23·1	2 37 21·6	2 37 19·7	2 37 20·0	2 37 23·9	2 37 21·7	39 20 26	39 24 38·
									27 43·3
	Mean Longitude from all Observations								39 26 10·7

APPENDIX E.

OBSERVATIONS to Determine Bearings of Base Lines.

Date.	No. of Chronometer.	At A. End of Base Line observed from.	Time of Observation.	Bearing of Sun's Centre.	Angle between Sun's centre and opposite end of Base B.	At A, Bearing of Base Line.	Remarks and Compass Variation.
			H. M. S.	° ′ ″	S.		′
January 24 ..	278	North End of the Kumayli Base	11 56 10·6	127 47 43	14 20 42	142 8 25	Variation, W. 4 55
February 8 ..	3353	West End of the Senafé Base. ..	4 33 21·3	111 45 57	S. 1 25 57	113 11 54	„ „ 5 17
March 25. ..	3353	West End of the Ashangi Base ..	3 47 45·5	91 26 44	N. 36 18 41	55 8 3	„ „ 5 36
May 13	..	West End of the Antalo Base ..	Altitude of Sun. 60° 50′ 55″	255 46 52	N. 37 4 20	292 51 12	

For the Bearing of Base at Magdala, the compass reading was taken, and an allowance made for a variation of 5° W.

APPENDIX F.

OBSERVATIONS for Time.

No. of Deduction.	No. of Chronometer.	Name of Place.	Date.	Barometer.	Thermometer.	Object Observed.	Altitude.	Chronometer Time of Observation.	Approximate Error of Chronometer.	Approximate Longitude.	Approximate Latitude.	Deduced Error of Chronometer.	Remarks.
			1868.		F.		° ′ ″	h. m. s.	h. m. s.	° ′ ″	° ′ ″	h. m. s.	
1	278	Kumayli Base, N. End	Jan. 24	29·5	70·0	Sun's centre ..	27 54 59·9	11 19 3	+2 33 36	39 38 0	15 13 20	+2 36 39·7	
2	278	,, ,,	,, 24	29·5	70·0	,, ..	30 55 38·3	11 33 59	+2 33 36	39 38 0	15 13 20	+2 36 39·4	
3	1682	,, ,,	,, 24	29·5	70·0	,, ..	27 41 53·6	3 24 16·5	−5 18 21	39 38 0	15 13 20	−5 17 2·1	
4	1682	,, ,,	,, 24	29·5	70·0	,, ..	29 6 28·8	3 31 12·8	−5 18 21	39 38 0	15 13 20	−5 17 2·8	
5	3353	Kumayli Camp ..	,, 30	29·0	70·0	α Canis Majoris.	39 3 7·1	4 15 5·3	−3 16 1	39 32 0	15 12 15	−3 16 28·8	
6	3353	,, ..	,, 30	29·0	70·0	β Ceti	24 48 4·4	4 30 2·3	−3 16 1	39 32 0	15 12 15	−3 16 25·1	
7	3353	,, ..	,, 30	29·0	70·0	a^2 Geminorum ..	61 7 4·1	4 53 23·9	−3 16 1	39 32 0	15 12 15	−3 16 28·4	
8	3353	,, ..	,, 30	29·0	70·0	α Geminorum ..	43 34 19·3	6 4 29·4	−3 16 1	39 32 0	15 12 15	−3 16 30·6	
9	3353	Sanafé Camp	Feb. 6	22·2	55·0	a^2 Geminorum	58 52 32·5	5 12 2·6	−3 16 38	39 30 0	14 41 40	−3 16 21·1	
10	3353	,, ...	,, 6	22·2	55·0	α Leonis	37 4 28·8	6 1 57·6	−3 16 38	39 30 0	14 41 40	−3 16 22·6	
11	3353	,, ...	,, 6	22·2	55·0	α Ceti	33 43 23·6	6 18 28·3	−3 16 38	39 30 0	14 41 40	−3 16 21·4	
12	3353	,, ...	,, 7	22·2	55·0	α Leonis	33 39 37·0	5 43 47·9	−3 16 44	39 30 0	14 41 40	−3 16 27·7	
13	3353	Sanafé Base, W. End.	,, 8	22·0	65·0	Sun's centre ..	31 57 30·7	5 36 39·9	−3 16 49	39 26 20	14 40 50	−3 16 16·6	
14	3353	Sanafé Camp	,, 8	22·2	55·0	α Leonis	30 23 49·3	5 26 34·6	−3 16 49	39 30 0	14 41 40	−3 16 34·0	
15	3353	,, ...	,, 8	22·2	55·0	α Ceti	39 34 39·1	5 50 8·1	−3 16 49	39 30 0	14 41 40	−3 16 38·2	
16	3353	Sanafé Base, W. End.	,, 11	22·0	55·0	α Leonis	37 52 29·5	5 44 51·8	−3 17 5	39 26 20	14 40 50	−3 16 37·1	
17	3353	Sanafé Camp	,, 12	22·0	55·0	α Leonis	33 42 7·4	5 16 52·0	−3 17 10	39 30 0	14 41 40	−3 16 46·0	
18	3353	,, ...	,, 12	22·0	55·0	α Ceti	33 34 4·9	5 55 6·0	−3 17 10	39 30 0	14 41 40	−3 16 44·5	
19	3353	,, ...	,, 13	22·2	55·0	α Leonis	34 57 23·6	5 52 17·1	−3 17 16	39 30 0	14 41 40	−3 16 48·3	
20	3353	,, ...	,, 14	22·2	55·0	α Leonis	33 37 7·3	5 15 39·1	−3 17 21	39 30 0	14 41 40	−3 16 55·3	
21	3353	,, ...	,, 14	22·2	55·0	α Ceti	22 3 12·8	6 34 38·3	−3 17 21	39 30 0	14 41 40	−3 16 59·2	
22	Watch	Halay	March 1	..	..	α Ceti	35 15 7·5	7 58 27·0	..	39 21 0	14 59 20	+0 4 1·4	
23	Watch	,, ...	,, 1	..	..	α Leonis	41 29 21·3	8 16 11·8	..	39 21 0	14 59 20	+0 4 0·9	
24	Watch	Adigrat	,, 12	22·5	60·0	α Leonis	36 21 27·5	6 59 37·0	..	39 31 30	14 16 30	+0 1 41·9	
25	Watch	,, ...	,, 12	22·5	60·0	α Ceti	36 34 9·5	7 7 17·5	..	39 31 30	14 16 30	+0 1 32·8	
26	3353	Antalo Camp ..	,, 18	23·5	75·0	α Leonis	65 21 37·5	5 7 0·9	−3 20 16	39 31 0	13 19 0	−3 18 43·6	
27	3353	,, ..	,, 18	23·5	75·0	α Tauri	32 46 17·9	5 20 32·1	−3 20 16	39 31 0	13 19 0	−3 18 56·1	
28	3353	Ashangi Base, W. End	,, 25	22·5	75·0	Sun's centre ..	21 24 28·3	4 12 57·3	−3 20 53	39 37 30	12 32 0	−3 18 56·4	
29	3353	,, ,,	,, 25	22·5	75·0	,, ..	22 53 11·3	4 19 32·5	−3 20 53	39 37 30	12 32 0	−3 18 46·6	
30	3353	Talania Plateau ..	April 19	21·2	75·0	,, ..	32 50 10·3	4 47 4·3	−3 23 5	39 7 30	11 32 0	−3 20 31·7	
31	3353	,, ..	,, 19	21·2	75·0	,, ..	35 5 56·9	4 56 17·6	−3 23 5	39 7 30	11 32 0	−3 20 29·1	

APPENDIX G.

POSITIONS fixed by Traverse.

Positions fixed by traverse.

Names.	Latitude, N.			Longitude, S.			Heights.	Remarks.
	°	′	″	°	′	″		
Initial Point of traverse at Annesley Bay	*15	15	46	39	44	10	..	
N. end Kumayli Base..	15	13	28	39	35	44	100	
Kumayli Camp	15	11	55	39	33	42	1,060	Mouth of Kumayli Ravine.
Lower Sūrū	15	5	35	39	31	44	1,440	
Upper Sūrū	15	3	59	39	30	54	2,600	
Maiân, or Undel Wells ..	14	55	40	39	31	46	3,950	
Rahagedi Camp	14	45	29	39	29	33	6,370	
Senafé Ghat (foot of)	14	44	10	39	26	59	..	
Senafé Ghat (top of)	14	43	31	39	26	56	..	
Senafé Camp	14	41	47	39	25	41	7,590	
W. end Senafé Base	14	41	2	39	25	7	7,580	
Guna Guna	14	32	32	39	26	0	6,860	Camp.
Focada..	14	24	20	39	23	40	7,890	Ditto } By Plane-table
Adi-grat	14	16	53	39	29	23	7,740	Ditto } fixing.
Mai-Wahéz	14	8	13	39	35	29	7,940	Ditto.
Lanchanet Village	14	0	37	39	35	36	..	
Adabâga	13	56	18	39	37	58	7,750	Camp.
Dongolo	13	48	40	39	39	7	..	Ditto.
Agula	13	41	24	39	38	25	6,360	Ditto.
Mai Makdem	13	34	38	39	38	28	..	Ditto.
Dolo	13	29	30	39	37	58	6,830	Ditto.
Ei Kullet	13	21	48	39	37	4	..	Ditto.
Büyah Camp	13	14	9	39	34	44	6,500	Nr. Antalo.
E. end Antâlo Base	13	15	19	39	35	48	..	
Mai-Masgah	13	8	2	39	36	46	6,610	Camp.
Mashik	13	1	43	39	37	28	7,620	Ditto.
Alaji Pass	12	58	49	39	38	53	9,880	
Atsala	12	55	52	39	39	4	7,980	Camp.
Aiba Pass	12	54	54	39	38	33	..	
Débarh Pass	12	52	33	39	38	41	10,520	
Bulâgo..	12	50	10	39	38	53	9,160	Camp.
Makau..	12	45	14	39	39	47	7,800	Ditto.
W. end Ashangi Base	12	37	6	39	39	3	..	
Ashangi Lake	12	35	49	39	39	0	7,900	Southernmost point.
Mussagita	12	32	34	39	38	54	..	Camp.
Adi Woka Vill	12	31	7	39	38	33	..	
Wombera Ghat	12	30	1	39	37	50	..	Top of.
Lât	12	28	7	39	35	18	..	Camp.
Duffat Pass	12	26	8	39	33	7	..	
Murâwah	12	21	57	39	32	14	..	Camp.
Dildi	12	11	51	39	29	47	..	Ditto.
Wundatch Pass	12	6	39	39	29	10	10,910	Ditto.
Mûja	12	3	19	39	27	41	9,470	Ditto.
Takazzé River	11	57	43	39	27	44	..	Ditto.
N. end of Wadela Plateau ..	11	56	24	39	28	24	..	
Santâra Camp	11	55	12	39	28	15	10,500	
Gahso Camp	11	50	19	39	21	42	10,200	
Sindi Camp	11	38	12	39	12	58	..	
Béthor Camp	11	33	56	39	10	19	..	
S. end of Wadela Plateau ..	11	32	36	39	10	31	..	
Jedda River	11	32	24	39	13	19	5,960	
Talanta Plateau	11	29	31	39	13	37	9,030	Top of Ghat. [plateau.
Talanta Camp	11	28	15	39	17	18	..	Southernmost ridge of
Basbilo River	11	26	27	39	19	26	5,370	Camp.
Magdâla	11	22	26	39	25	47	9,190	

* By Astronomical Observations.

APPENDIX H.

BOILING-POINT Observations and Resulting Heights.

Names of Places.	Boiling Thermometer.	Thermometer in Air.	Corresponding Heights above Sea.	Boiling point observations and resultant heights.
Maiàn, or Undel Wells	206·20	72·0	3,947	
Rahaguddy	201·85	50·0	6,374	
Senafé Camp	199·50	52·0	7,726	
W. end Senafé Base	199·75	48·5	7,579	
E. end Senafé Base	199·50	66·0	7,726	
Marâra H.S.	198·57	79·0	8,210	
Shimazana H.S	198·00	61·0	8,530	
Akub-Terika H.S.	197·50	79·5	9,047	
Mashai H.S.	198·67	76·5	8,340	
Mount Seora	196·83	69·0	9,369	
Guna-Guna	200·93	40·5	6,860	Camp.
Into-Koko	198·80	59·5	8,170	Plateau.
Mount Hazawut	198·60	76·0	8,380	
Source of Hadâs	200·38	55·0	7,240	
Sa-asa Heights	198·00	73·0	8,712	
Halai Village	198·40	61·5	8,412	
Darn-â Village	198·05	74·5	8,680	
Focada Camp	199·17	46·0	7,890	
Adi-grat Camp	199·60	51·0	7,740	
Mai-Wahez Camp	199·03	40·0	7,940	
Ada-baga Camp	199·55	63·5	7,753	
Agula Camp	202·00	69·5	6,355	
Dola Camp	201·17	68·0	6,832	
Bayah Camp	201·62	50·0	6,497	Nr. Antalo.
Mai-Magah	201·67	87·0	6,610	
Maschik Camp	199·77	63·0	7,624	
Atsala Camp	199·22	70·5	7,982	
Aiba Pass	196·95	49·5	9,183	
Alâji Pass	195·93	62·5	9,875	
Aiba Valley	198·05	54·0	8,680	
Dêbarh Pass	194·80	60·0	10,524	
Bulâgo Camp	197·13	62·0	9,161	
Makan Camp	199·50	67·0	7,800	
Pass above Makan	198·75	70·0	8,254	
Pass above Ashangi	197·27	70·0	9,125	
Ashangi Heights	197·92	69·0	8,737	
Lake Ashangi	199·40	74·0	7,892	
Wondatch Pass	194·07	54·0	10,912	
Mûja Camp	196·57	59·0	9,472	
Jedda River	202·73	77·0	6,956	
Talanta Plateau	197·33	60·0	9,032	
Bashilo River	203·83	91·5	5,371	
Islamgi Plateau	198·1	72·0	8,647	
Selassie (highest point)	197·23	69·0	9,161	
Falah	197·88	81·0	8,823	
Gombâgé Spur	200·40	94·0	7,392	(End of.)

NOTE.—The mean of three (3) boiling thermometers is used. These heights are all referred to Alumta H.S., where the thermometer read 208·2 (boiling point)—thermometer in air being 73°. The height of Alumta, determined by triangulation, is 2,802·5 feet—mean of two independent observations giving 2,797 and 2,808 feet respectively. Alumta is connected with north end of Kumayli Base, the height of which point is taken to be 100 feet above the sea-level, from levelling operations for the railway.

CHAPTER XXXVII.

ARMY WORKS CORPS AND BENGAL COOLY CORPS.

Proposal by Capt. Walsh regarding an Army Works corps.

When the expedition to Abyssinia was determined upon, Sir Robert Napier desired to have an Army Works corps and a Cooly corps placed at his disposal. Captain T. Prendergast B. Walsh, of the Bombay Staff Corps, submitted an excellent proposal for the organization of an Army Works Corps, which was approved of by Sir R. Napier, submitted to the Bombay Government, and acted upon with some slight modifications. The Cooly corps was organized at Allahabad.

Army Works Corps.

Captain Walsh's proposal for an Army Works Corps was based upon the fact, that in Abyssinia the military service of every fighting man would probably be, constantly required in his own branch, so that it would be impossible always to give fatigue and working parties, when required, without lessening the effective strength, or wearing out our soldiers; that while large armies can easily spare a portion of their combatant force for sapping and mining purposes, the construction of siege works, making roads and bridges, digging trenches, pitching tents, cutting wood, drawing water, loading and unloading stores, and carrying the sick or wounded, &c., &c., for which the labour of able-bodied men is required in the field, a small force cannot spare working parties in the same numbers; it takes as many working men to clear a road for a few guns and waggons for a small force, as it does for a large one, which is more largely supplied with wheeled carriage; and looking at large and small armies together, there is a disproportion between the number of men required for *Military* Civil duties, and those wanted for actual combatant operations where the divisions are small. "The ability to advance is an essential condition of offensive combinations," and Captain Walsh represented that the formation of a corps such as he proposed, would enable the General Commanding to overcome those natural impediments which the force might expect to meet with on the rugged heights, or in the deep ravines of Abyssinia, and which might otherwise for a time retard the onward progress of the columns.

The following is Captain Walsh's report on the subject, on submitting his proposal for consideration:—

"Tumultuous crowds of Dooly-wallahs and Coolies will be sure to cause much inconvenience. Alexander's conquests were mainly attributed to the precision with which his transport service was worked, and he always endeavoured to enforce a certain degree of

" order and discipline amongst those who had to assist in the carriage of his stores, and " whose special duty it was to clear the road of all obstacles. I am of opinion that if a " certain kind of military discipline is maintained amongst the class of men who must be " employed to enable the force to rapidly, and with facility, traverse the country, the best " results must follow.

" If my plan of massing Dooly-wallahs and Coolies in battalion, and marching them " in military order is approved of, the country people will be protected from pillage, and " ready and effective aid will always be at hand when a road becomes impracticable for wheels " or mules. I might point to the great assistance which the Generals in the Crimea " received from the workmen and labourers sent to assist in making roads, who, although " under the control of Messrs. Peto and Co., the well-known contractors, were not allowed " to wander about at their own pleasure, but subjected to a judicious amount of control.

" I propose enlistment in order to prevent complications arising hereafter, which will " be possible if men are drafted off to a foreign country on a mere contract. Martial law " no doubt would give a General great powers over camp followers, but at the present day " it is not advisable to have recourse to its provisions in the case of civilians. A well- " known writer has put it that the Act of Enlistment begets a 'military enthusiasm in the " individual' enlisted, while others view it as most important, because it secures for a " General the entire services of the men who accompany his force.

" The scheme which I have drawn out may in many minor points be altered; for " instance, it might be considered well to supply a certain portion of the men composing " the force with muskets. However, I propose swords and pistols as the best weapons. In " the Sardinian Army, in some companies, the men, say 20, are provided with one kind of " weapon, and the rest with another. This plan, if considered expedient, might be " adopted, but of course, as the corps is intended for manual labour, and not for com- " batant purposes, the question of arming it like a regiment of the Line does not arise, " while, nevertheless, the men must have arms to protect them from a surprise. When " employed upon dangerous duty, a guard of Infantry could be supplied to protect them " while at work.

" The Austrian Engineer soldier carries his tools strapped to his knapsack at the side; " this prevents the handle of the spade or pickaxe from getting between his legs. These " men carry a weight of 45 lbs., including their kit. Small tools and nails are divided " amongst the men, so that there is always at hand some appliance of a useful kind. When " troops proceed on any sudden march where carriage cannot be obtained, this Corps would " be most useful in carrying small shelter tents, which it will be recollected proved so " valuable to the French Army in the Crimea. The same description of temporary tents " are occasionally used at the camps of Aldershot and the Curragh, and are known as the " 'Tente d'Abri.' The French tent is described as composed of pieces of linen, 5 feet " square, with button-holes along the edges. It has two sticks, which are some four feet " long, and are stuck into the ground at the distance of 5 feet apart, a cord at the top " unites both. Two pieces of cloth are laced together, and are then thrown over the cross " rope: the cloth is then strained out into the form of a rowti, and the bottom edges " pegged to the ground. Two ropes attached to each pole, and pulling in reverse direction " supports the tent, and prevents the wind from injuring it. Each French Cavalry soldier " is provided with a piece of cloth, and when three men unite a capital tent is extempo- " rized. If more join, the tent can be made of any size. A few Dooly-wallahs would carry " a sufficient number of such tents, so as to encamp hundreds of men. As the cloth would " have to be double or treble for a tropical climate, it would of course be of greater weight " than the French shelter-tent, which the troops carry themselves; and this being so,

"Coolies must be employed to carry these tents, if adopted. When the outside of the "bottom edges of these tents are banked up with earth, and the inside hollowed out, they "resist weather beautifully. All this comfort for the troops can be secured by attaching "portions of the proposed Army Works Corps to each regiment proceeding upon any "special mission.

"Again, the services of this proposed Corps would be most valuable for conveying the "camp kettles, as well as light camp equipage, where carriage cannot be spared.

"Hurdles and small rafters can be carried by men, and, with the addition of mud, "straw or grass, huts can be made in a very short space of time. It is impossible, in a "confined space, to show the great value of a corps of this description, and which for convoy "duty would be also invaluable. Their use, too, in foraging and conveying supplies, I feel "sure, would be duly appreciated. Placing them under military discipline would, as I said "before, prevent disorder and plunder. When troops have to perform these duties, it "wearies them for the duties of the following day, and when 'forced foraging' has to be "done, it is even more distressing upon men and horses. Much depends on the rapidity "of these expeditions, and were a special service organized for packing and carrying the "supplies seized, the troopers and Infantry sent as a guard would be more free to act than "if hampered with the transport of the hay and grain secured. Again, this corps would be "of great value in embarking and disembarking stores. The lifting of heavy weights by "men not used to such labour is most injurious. The Dooly-wallahs whom I propose to "enlist are inured to labour, and accustomed to bear great weights. I regard this as a "most important feature.

"I have not proposed any particular age or standard being laid down prior to enlist-"ment. I think that the opinion of a committee of two combatants and one Medical "Officer will be sufficient to justify enrolment. The term of service is short, and if the "applicant for enlistment is strong and in robust health, it would be well to dispense with "the severe test as applied to recruits.

"I fear that I have been almost prolix, and apparently lengthy in these remarks, but "I have been run as to time in preparing this paper, and consequently have not been able "to properly correct or prune it. It was committed to the printer's hands 12 hours after "the idea had first suggested itself to my mind. I believe that the proposal is a practical "one, and as I have only the good of the service in view, I have ventured to put my ideas "on paper. There is no time for correction. The 1st Brigade has sailed for Abyssinia, "and other troops are rapidly following.

"Pontoons, so useful for forming temporary bridges, are usually conveyed upon car-"riages, but can be also carried on camels. Those invented by Colonel Blanchard only "weigh 150 lbs each, and are 12 feet long; they could, therefore, be easily carried by four "men with poles.

"Mules, no doubt, would be employed to carry the necessary planks, pontoon "saddles, baulks, chesses, &c., where pontoon carriages could not be procured or used; but "in cases of emergency, where neither are procurable, the employment of the men of the "Brigade, which I have proposed, would prevent the movements of the column being "retarded, and pontoon stores might thus be carried many miles. The ropes, bends, and "knots used in pontooning are not massive cables, and could therefore be easily carried by "men on emergent occasions. They would also prove of service, as drags, ropes, &c. In "this campaign, on account of the nature of the country, ingenuity, ready contrivance, and "rudely-made military stores must take the place of the more scientific and regularly con-"structed war gear and material, which would be easily procurable in Europe. I do not "for a moment pit man labour against that of horse, camel, or mule; yet I would urge the "necessity of using trained and disciplined human labour in preference to that of numerous

" and uncontrolled hosts of coolies, who must be employed to supplement the Transport " Service. A most important ingredient in our anticipation for success is that there should " be an organized system for the management and direction of the coolies and labourers " which we shall have to employ. They may be attached to corps and departments, and " subject to the rules and regulations of such ; but I feel convinced that if they have a " composition of their own, and be made into a separate service, greater efficiency will be " secured, more work will be got through, and a larger amount of harmony and discipline " will be gained, than if they are worked in gangs, upon the plan of a railway contractor.

" By the mail which arrived on the 10th instant, we are informed that the Topogra- " phical Department reports, which the War Office has recently produced, all establish the " fact, that, in reaching the highlands of Abyssinia, animal carriage will be retarded, on " account of the inaccessibility of the country. Indeed, from what I have heard, I believe " that the Home Government have already been informed that the transport of stores in " certain places must be carried out by coolies. I do not wish to quote M. du Bisson as an " authority, but still he asserts, and it may be with truth, that there are provinces in " Abyssinia where often man alone serves as a beast of burden, helping himself with his " feet and hands. It has been also stated in the columns of the English 'Times' news- " paper, that the difficulty of transit cannot be imagined, and this is founded upon the " reports of Abyssinian travellers. I think that the reports which are current at home " may be taken as an excuse, for, and as a justification of the small expense which I propose " to incur in organizing this corps, which I believe would assist in overcoming these diffi- " culties if they prove real. Mr. H. Dufton, who travelled in Abyssinia in 1863, pointed " out that the ruggedness of the route in some places is so great, that camels cannot be " used, and that only a single file can advance at a time. I am not endeavouring to " endorse these discouraging accounts; indeed, I am inclined to believe that a tide of " exaggeration in England has set in, and that no such gigantic difficulties will be met " with. But the existence of uncertainty on the point justifies, I would respectfully urge, " any expenditure incurred to meet the worst anticipations, even if such have been formed " on only a prudential line of precautionary policy. By the same mail, a Mr. Perceval, a " merchant, who was in Abyssinia in so lately as 1860, has suggested what "a hundred " wood cutters with a box of matches, or a few practical quarrymen," might do against the " Army when in the woods through which our soldiers must pass, if they adopt any one of " the three routes to Abyssinia which the force must traverse in order to rescue the " prisoners. But might not the same kind of agency circumvent the construction of the " cul de sac, to which he refers? I have named Dooly-wallahs as the class of men " whom I propose to enlist, simply on account of their endurance under weight; but I am " also inclined to think, that if one corps were formed from the wood-cutters of our forests, " the men would prove invaluable. The Dang Jungles, between Goozerat and Khandeish " alone would supply many wood-cutters, others might be procured through the exertions " of conservators of the various forest establishments in this Presidency. The rate of pay " usually earned by the woodmen is so small, that the sum I have fixed would attract many " to the standard of the proposed brigade."

Major-General Tremenheere, C.B., Commanding Engineer at Bombay, raised the Army Works Corps.* Its organization and working in Abyssinia will be understood from the subjoined report, framed at the conclusion of operations by Lieutenant R. H. F. Rennick, R.A., Officiating Commandant of the Corps:—

* Under the authority of Bombay Government Resolution, Military Department, No. 4,738, dated 30th Nov., 1867.

Report on the Army Works Corps.

"If the numerous services the Army Works Corps rendered, not only in connection "with the Railway Department, the line of whose action was limited, not extending beyond "Kumayli Plain, but with the movements of the Army at large, be taken into account, "it will be seen how far the corps has been successful, and to what extent it has answered "the expectations entertained of its utility and efficiency.

"This body of men, who were in November 1867 recruited on the spur of the "moment and shipped to the scene of active operations, at first without any recognized "commander, began its landing in December 1867, and accomplished it by the 11th "February, when the full complement of men, 1,072 in number, with their late Com- "mandant (subsequently appointed) and staff, were all landed ready for work.

How employed.

"The call for these men was great; they were immediately on landing placed at "the disposal of the various Engineer Officers who required them. They were all at "first employed on the landing of the stores, the railway engines, plant, &c.; subsequently "on clearing the surveyed line of railway to Kumayli, and on making the railway. "Fifty of the Chinamen of the Corps, under Lieutenant Phillpott, R.N., were the only "men retained to keep the railway supplied with plant for the transports up to the comple- "tion of the line, or rather to the close of the campaign. They worked very well, and "they were the admiration of every one for the great physical force and endurance they "displayed on the hard work they were employed upon under a trying sun, to which they "were unaccustomed.

"In the latter days of January the men (the above Chinamen excepted) were, in "compliance with directions, more distinctly detached under Engineer Officers in various "gangs, and worked as follows:—At Zula, under Captain Wood, R.E., and afterwards "under Lieutenant Lee, R.E., along with the Sappers and Miners, in completing the "piers and maintaining them in repairs, and in erecting the various sheds, buildings, "&c. In this latter duty the carpenters only assisted.

"At the Pioneer Wells, the men worked under Lieutenant Graham, A.F.E., and "Lieutenant Baird, R.E., on the maintenance of the line either way when the railway "got beyond that station, and in making the various sidings and loop lines for the working "of the trains. They also assisted in putting up the various sheds and contrivances for "the workshops, and they had besides to keep up the supply of water to the engines, which "was an arduous and trying duty, by regular reliefs, and they did so remarkably well under "the untiring superintendence of Inspector Davenport, who was always present when "required. There is not one instance on record as to the supply having failed. I beg to "bring Inspector Davenport's services to favourable notice. This work told severely on "the men, and many have been unfitted from the Pioneer Wells, who have never received "any compensation for the extra time they had worked.

"At the railway camp, which always changed as the line advanced, the men worked "under Captain Darrah, R.E., and the officers under his directions, in clearing the line, "making cuttings, throwing up embankments, laying the rail, building bridges, and "viaducts, clearing the wells, and keeping up the supply of water to the camp, &c. The "'Huddas Bridge,' which was constructed by Lieutenant Williams, R.E., and the "numerous other viaducts and small bridges between Zula and Kumayli, were entirely "undertaken and completed by the men of the Army Works Corps under the direction of "that officer, and, when he left for the front, under the superintendence of a Mr. M'Gregor, "of the Railway Department, and that of a few European carpenters belonging to some "of the regiments of the line.

"The important duty of keeping up the supply of water at the railway camp "devolved on a native muccadum of the name of Golab Khan, a discharged havildar of the

"Bombay Sappers and Miners. This man, whose conduct also I beg to bring to notice, "has, by his continued exertions and careful supervision, never allowed the water supply "to fail. At one time, when detachments of the 2nd Grenadiers, 18th Regiment, Bombay "Native Infantry, 45th Regiment, of Sappers and Miners, of the men of the Army Works "Corps, and Shoho labourers, were all encamped together, the well, which hardly yielded "the required number of gallons, which was 3,500 a day, was worked until the wants of "the camp were satisfied.

"At Kumayli, a gang of men worked under Lieutenant Merewether, R.E., in "looking after the pumps, sinking wells, &c., and was sent back to the railway camp under "Captain Darrah, R.E., in April last, when the earthworks for the railway from Kumayli "and Zula met. These men worked under Captain Hill, R.E., and Lieutenant Smith, "R.E., before they were made over to Lieutenant Merewether.

"Beyond Kumayli, there were originally 200 men detached under Lieutenant "Rule, R.M., doing duty with the Army Works Corps, for work on the ghats. Most of "these men were bildars or miners. They did excellent service in blasting all along the "road, in sinking wells, and keeping the road clear, and in repairing all damage from time "to time done by the giving way of the embankments, and by the rough handling of the "carts, &c., and in the latter days by the floods. These men were distributed as follows, "on the road being opened to Senafe:—

"Seventy-five at Suru, to keep the pass clear, and look after the telegraph.

"Twenty-five at Undul Wells, to look after the pumps, road, and telegraph. Both "the men at Suru and Undul Wells worked under Lieutenant Mainwaring, A.F.E., in "sinking extra wells and making clearances for tents and Commissariat sheds, &c., in "order to attend to the wants of the returning force.

"Twenty at Rahagedi; and

"Thirty at the Zigzag, for the same purpose as above.

"The men at the latter place were always at work, for the road not only required "to be mended on account of the damage done by carts and stray animals, but also to "be cleared of animals, who used to break down and die throughout this steep ascent of "the ghat.

"I have the pleasure to mention here the name of Gopal Sing Maistry, who per- "formed this duty satisfastorily, and kept the road in admirable order.

"Forty of the men worked between Senafe and Adigrat with Lieutenant Clarke, "R.E., who had the pumps and water arrangements entirely under his charge after the "departure of Lieutenant Lemessurier, R.E., on other duty. Some of these men went "with him as far as Antalo.

"The remainder of the men along with those enlisted at Senafe, and the carpenters "sent up from Zula in April last, were employed on all the works that were being carried "on by Captain Hills, R.E.; in the latter days particularly, on the hutting works at "Senafe. They were often sent out to Focada, Gana Guna, Adigrat, &c., to do some "blasting and mend the road.

"Besides these men, there were 35 others employed under Lieutenants St. John, "Haywood, &c., on the construction of the telegraph.

"In the latter days of their stay at Zula, the men of the corps made themselves "very useful in re-shipping the railway engines and plant, the various stores and treasure, "and in working on the cemetery. The masons and carpenters of the corps, along with "those of the Field Park, largely contributed by their labours in erecting the various "tombs over the dead of the Abyssinian Force.

"Thus, in reviewing the foregoing facts, it will be seen that the line of action

"of the Army Works Corps extended from Zula to Adigrat, over a distance of 110 "miles, and that the men had a hand in carrying out all the various works of general "utility.

"They may be summed up as follows:—

"I. Assisting in landing and shipping of stores of all kinds.

"II. In the construction, working, and maintenance of the piers, of the various "sheds, &c., and of the railway from Zula to Kumayli.

"III. In keeping open the road through the Senafé Pass, more particularly at the "last, when it was damaged by floods.

"IV. Assisting in laying the telegraph, and furnishing labour for water supply "arrangements.

"I hardly feel that I am called upon to record an opinion as to the merits of the "men in the various capacities they were employed in, and as to how they acquitted them- "selves in the above works. I presume this has been done by officers under whom they "were more immediately employed.

"I have ventured in the above paragraphs merely to mention the various works "that the men of the corps either undertook and completed, or had a share in the execu- "tion of, also under whom they worked: but I hope that his lordship from his own "personal observations will be enabled to do justice to the merits of the men of the corps "by recording such an opinion of them that their unremitting labour, the works they have "done, and their implicit submission to orders to command. It is due to the men irre- "spective of anything the officers under whom they immediately served may have said in "their behalf, that such a record should be made, were it even for the mere sake of "form.

Conduct of men.

"As far as my own experience and connection with the corps go, I can with "confidence assert that the men were the most sober, willing, and obedient lot I have ever "had anything to say to. The intelligence and the conduct of the Chinese from the very "beginning, and all throughout the campaign, call for the greatest praise. The men "grumbled very little, and they did so only under the most trying circumstances. They "were always willing and ready to turn out, except on one or two occasions, when they "showed a slight reluctance when disturbed in the midst of their cooking, and at midday "after a morning's hard work. This irregularity was put to rights after due representation "of the matter. There is no record of rows or riots having taken place, except once, when "the Chinese struck work on the Sunday; but the case was peremptorily dealt with, and "the cause of the evil removed. On the whole, the behaviour of the men, taking into "account the strange and antipathetical classes that were huddled together, and the short "training to discipline they had, and the almost entire absence of drunkenness, is to be "considered highly satisfactory and commendable.

"It will be almost impossible to arrive at an average of what number of men "were employed on a certain work during a certain time, considering the changeable "nature of the requirements and the great fluctuations of the numbers of sick; but it is "a matter of comparative ease to calculate the daily average of men employed at each "station on the various works that were being carried on. Of course at times the men "employed were considerably in excess of the average numbers stated below; but those "given may be considered as nearly representing the average from the beginning of the "campaign to the end, a period extending over six and a half months. Thus, all through "that period it may be said that at—

" Zula daily worked a body of	320 men.
Pioneer Wells, ditto	75 „
At Railway Camp, ditto	310 „
Above Kumayli, ditto	170 „
And on the Telegraph, ditto	35 „

Total strength.

" There were altogether three officers, five inspectors, and 1,224 men sent from " Bombay, from the first formation of the Corps up to the 31st May, 149 of whom were " sent after February, to replace men returned as unfit. The men unfitted for further " service in Abyssinia were as follows :—

Number invalided.

" In January	15
„ February	100
„ March	52
„ April	73
„ May	94
„ June	6
	340

" or more than one-fourth of the total numbers sent out.

" There was one serjeant supervisor invalided in April, and two officers and one " inspector in June.

" The two writers of the Corps were unfitted in the early part of January.

Deaths.

" There were 10 deaths recorded, two of which were on the way out, seven in " Abyssinia, and one on the way back; but of the seven in Abyssinia, two men were " drowned in the flood of Suru, and one man supposed to have been killed on the hurried " march back.

" There are 32 men put down as missing, of whom no trace could be obtained, " although repeated enquiries were made, and a careful search in the hospital records, to " ascertain what had become of them.

Effects of the climate on the men.

" If one is to judge of the climate of Abyssinia and the effect it had on the men by " the number of them returned to India as unfits, and by those always in hospital, the " conclusion to be arrived at of its salubrity is anything but satisfactory. The climate " told severely on the men of the Corps. It could not be expected to be otherwise, the " men were employed on very hard work, and the food they lived upon anything but of a " sustaining nature. There are instances where men, after having worked over their " twelve hours a day, had to go without any food almost, for they could not satisfactorily " boil the dholl and rice they received, owing to the hardness of the waters used. Flour " was not served out for many days, as there was a great call for it from the front. The " Chinese, who received European rations, stood the country much better than the natives " of India. The Mahrattas and the Gentoos were the second best; then came Mussul- " mans, and after them the other castes.

" Those the climate most disagreed with were the Purdasee Brahmins, the Parsees, " and Portuguese. If ever there be a call for men on a similar expedition, these castes " ought never to be entertained; not only are they physically unsuited for hard work, but " they are *most indolent*, unwilling, and scheming. Nearly every Parsee or Portuguese of " the Corps deserted, if he could not get a staff appointment, either as a cook, or servant " to some European.

Medical arrangements.

"The medical arrangements were the best that could be made, although they left a good margin for improvement. At Zula, they were treated at the General "Hospital. The men at the Pioneer Wells were sent to Zula for treatment. The men "at the Railway Camp were treated by Dresser 'Gungajee Rowjee,' who was most zealous "and attentive to his duties. He was most valuable in one way, that he never showed "any partiality, nor gave the least encouragement towards scheming or malingering. "The men along the passes had to come in to Zula. The men at Senafè and to the "southward of Senafè were treated at the Native Hospital at Senafè. The admissions "into hospital at Zula and the Railway Camp were numerous. In March there were "over 60 men, and in April and May over 80 daily attended to. Striking the average "for the men from Zula to Kumayli, the admissions were as many as 10 per "cent., and sometimes the percentage was greater. The hospital at the Railway Camp "was visited by Dr. Nolan, of the 2nd Grenadiers, during the time that regiment was "in camp, but it was only in May an Assistant-Surgeon was sent to look after the Railway "Camp.

Rations.

"The men of the Corps were rationed on two different scales; the Chinese "received European rations, and the Natives were rationed on the scale for camp followers, "a difference which they felt all through the campaign, and which told on them severely "in the long run.

"At the close of the campaign, the men were given two ounces of meat, some pickles, "and lime juice, but the meat being invariably beef, they preferred, most of them being "Hindoos, to do without it. Doctors Nicolson and Nolan, who had the advantage of "being some time with the men, were both of opinion that the large numbers unfitted and "the heavy sick lists were entirely owing to the want of proper food. Most of the com-"plaints the men suffered from were traced to this source. They were further of opinion "that, if the campaign had lasted a few months longer many men who were suffering from "dysentery, cutaneous diseases, and from little scratches that had developed themselves "into suppurating ulcers, would have had to be sent back to India.

Health of the men.

"One would have supposed that the natives of India, coming from a country "comparatively speaking, hotter than that of the Chinese, who are from a more northern "and congenial climate, were more likely to stand the campaign and keep their health in "the hot plains of Zula. However, the reverse seems to have been the case. The native "in Zula was out of his element; he had not the water that is essential to his very "existence, while the Chinaman was well taken care of, he had his rations of fresh meat "and vegetable and his tea. If the Chinese kept their health better, it is to be ascribed "entirely to the better food they got, as I do not see any other cause to trace this supe-"riority to. I am convinced if the men had received fighting men's rations and spirits they "would have done equally as well as the Chinese, and not one-third of the number would "have been unfitted. The grant of better rations would have fully repaid Government for "the beneficial results it would have produced. While Government has actually been put "to very great expense by not putting the men on a better scale of rations, it would have "been put to still greater expense had the war lasted and the natives been maintained on "the same scale. Out of 176 Chinamen, 13 were unfitted, or ·073 of the number sent "out. Out of 1,048 Natives, 327 were unfitted, or ·312 of the whole. There were never "more than 10 Chinese in hospital, while in May there were over 80 Natives sick; thus, "for every Chinaman there were five Natives sent back.

"The organization of the Corps, as sent out to Abyssinia, with the pay, was con-"stituted as follows:—

		Rs. per mensem.
" 1	Commandant, with a Staff salary of	.. 500
2	Subaltern Officers, each ditto .. .	.. 300
1	Serjeant Supervisor, with a salary of.. ..	.. 200
1	English Writer on	.. 80
1	Mahratta Writer on	.. 60
1	Store Carcoon..	.. 30
4	European Inspectors on	.. 120

Organization of the corps.

" And of eight gangs of useful workmen, consisting of,—

" 1	Maistry on	.. 50
1	Carcoon on	.. 30
1	Muccadum of Beldars (if a Native) on ..	.. 18
	Ditto (if a Chinaman) on	.. 35
25	Beldars (if Natives) on..	.. 15
	Ditto (if Chinamen) on	.. 25
1	Muccadum of Miners (if Native) on	.. 18
	Ditto (if a Chinaman) on	.. 35
25	Miners (if Natives) on	.. 15
	Ditto (if Chinamen) on	.. 25
3	Muccadums of Coolies on	.. 12
75	Coolies on	.. 10
1	Blacksmith on	.. 40
1	Bellows boy on..	.. 10

" The men of the Corps consisted chiefly of Chinese, Mussulmans, Mahrattas " recruited from the Poonah, Darwar, and Sattara, Collectorates, Gentoos from Sholapore, " Parsees and Portuguese of Bombay. The latter were very few. A mixture of certain " castes of Brahmins of Hindoostan were also enlisted. Many men came from Nagpore, " Kundwah, and from the Hyderabad districts.

" Each man obtained from Government the following free clothing :— Clothing.

One cloth great coat;
One cloth short coat;
One pair of cloth trousers;
Two loose banians;
Two pairs of woollen socks;
Two pairs of boots; and
One kumlee, or country blanket.

" Each gang was intended to work separately, but the requirements were of such " a variable nature that not once the men of a single gang were employed on a single " work. I cannot help recording, as far as my experience goes, that the system of gangs " did not answer at all. It was the cause of the greatest confusion in the accounts, and " consequently it necessitated an amount of work, which could have been easily avoided " had the men never been classed in gangs at all. Neither were the men of any one gang " employed on a single work. There was a mixture of all gangs wherever a party was " required to work, and at first always a difficulty to get the maistries and muccadums to " exercise proper supervision over men who did not belong to their gangs, and not to show " partiality to their own lot. Also I am inclined to think, that if the Army Works Corps " had been directly under the orders of the Commanding Engineer, instead of under those

"of a distinct Commandant, 'things' would have gone on more smoothly, greater interest "would have been taken in the men, for every Engineer Officer would have been made "responsible for those under him, proper reports and returns would have been sent in, and, "above all, the men would not have been overworked, as they often were. As it was, the "men were scattered over too great a distance to enable the limited number of officers "with the Corps to look thoroughly after them. By these remarks, I must not be under-"stood to say that the men were the less efficient, on the contrary, they were made "almost too efficient, and were worked in many instances more than was conducive to "their well being.

"The Civil Inspectors, who had been the subject of correspondence in Bombay, "performed their duties satisfactorily. Serjeant Supervisor Vanovy, of the Department "of Public Works, was totally unfit for service in Abyssinia. He did little duty, being "most of the time on the sick list, until he was invalided. He died on his way back to "Bombay. He was suffering from a very acute attack of liver in India previous to em-"barking, and it would have been better had he not been sent out. Mr. Jephson, who "was promoted in his place, has been of great service both to Captain Blakeney and "myself, he has, at all times, shown himself steady, zealous, and untiring to the calls of "duty. Captain Christie mentioned him in his report on the Sooroo defile, and recom-"mended those employed for pecuniary reward.

Tools. "The tools, &c., supplied to the Corps were by far too numerous. There were "enough in charge of the Corps to supply a small army almost. They were the cause of "some annoyance and trouble. The Engineers' park was near at hand to supply all wants. "They cost 12,933 rupees, and not one-eighth of those sent out have been used. They "were all returned to the park.

Pay of the men and cost of tools, &c. "The pay of the corps from the beginning of the campaign to the date of "discharge of the men, exclusive of the pay of the officers, and the various other charges "made in Bombay, amounts to 108,349 rupees 7 annas and 10 pies.

"The men were paid up to the date of embarkation at Zula, and discharged with a "month's gratuity. An abstract of the abstracts of the corps as submitted for audit, "with an explanatory balance statement is attached to this report for further reference.

"I have not been able to get all the items of expenditure to arrive at a correct "estimate of the total cost of the corps; but from the data I had to work upon it may "be assumed the total cost of the corps was 251,082 rupees, or 204 rupees per man.

R.	A.	P.			
" 13,454	14	0	on account of	tools, stationery, &c.	
108,849	7	10	"	"	pay, gratuity, &c.
40,186	0	0	"	"	clothing.
36,620	0	0	"	"	passage.
9,697	0	0	"	"	rations (for Chinese).
10,244	0	0	"	"	rations (for Natives).
1,431	0	0	"	"	enlisting men.
1,100	0	0	"	"	extra boots and railway passes.
15,000	0	0	"	"	of staff pay, donation batta, passage money, &c., for Officers.
15,009	0	0	"	"	the making of the tents supplied to the Corps (which must have fully cost that amount).

"Out of the total cost, five-sixths were incurred entirely on account of the railway,

" and one-sixth on account of other works, for the whole of the men of the corps, excepting " the 200 detached for the ghâts, and the 35 for the telegraph, either worked on the " railway or on works which directly conduced to its advancement, such as the supply of " the plant, the work on the piers, and the keeping up of the water supply.

" The following officers served with the Army Works Corps :—

" Captain (now Brevet-Major) Blakeney, Bombay Staff Corps; Lieutenant Rennick, " Royal Artillery; and Lieutenant J. Davis, Public Works Department, unattached list. " Captain Blakeney and Lieutenant Davis proceeded from Zula on medical certificate " to England. Lieutenant Rennick, who was placed in command, had all the work of " shipping and bringing the men back to India, paying them on their being discharged, " and settling their accounts. Lieutenant Phillpott, R.N., and Lieutenant Rule, Royal " Marines, did duty with the corps; both these officers, who did excellent service, have " been favourably mentioned by the Commanding Engineer." Officers of the corps.

Bengal Cooly Corps.

Sir R. Napier, when the arrangements for the organization of the Force were first entered into, applied for a Cooly corps of 3,000 men.* A corps of the strength or exact description applied for was not obtainable, but orders were issued for the collection of a body of two thousand kahars, or bearers, at Allahabad, from the vicinity of that place, Dinapore, and Benares. The whole were placed under the charge of an officer, Lieutenant W. G. Smith, and the following instructions were issued regarding the terms of service, pay, clothing, equipment, &c., of the men :—

" 1. *Terms of Service.*—The terms of service are to be very carefully explained to the " men. They will be required to serve while the Expedition lasts, and to carry fair loads. Terms of instruction for raising Bengal Cooly corps.

" 2. *Bamboos and Rope.*—They should be furnished at Calcutta with stout bamboo " poles in the proportion of one to two men, with 10 per cent. spare; also with a sufficient " quantity of good stout rope for fastening loads, &c.

" 3. *Scale of Pay.*—While absent from the Presidency, they will receive eight rupees " a month with free rations, on the same scale as public establishments, viz. :— Pay.

" Wheat, rice or flour	1 seer.
" Dhall	2 chittacks.
" Ghee	1 chittack.
" Salt	One-third of a chitack.

" 4. The mates, one per 25 kahars, will receive 10 rupees a month and rations. The " sirdars, one per 100 kahars, will receive 15 rupees a month and rations. Their pay, till " date of embarkation, has already been fixed at the usual rates of pay for bearers on " command.

" 5. *Scale of Clothing.*—Each man on embarkation will receive a blanket, and on " arrival at Massowah† a suit of warm clothing, consisting of a cap, a coat and pair of " trousers, blanket for cloak, two flannel banians, two pairs woollen socks, one pair shoes or " boots. Clothing.

" 6. *Advances.*—Only small advances, if any, should be made to them, and then only " on security of the chowdries.

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* See Chapter IV, page 55, and Chapter VI, pages 157, 173.

† This was on the same scale as for the Cooly Corps employed in the China Expedition.

Remittances.

"7. *Family Remittances.*—Those men who desire it will be furnished with family "remittance certificates, on which will be noted the amount to be paid, and the parties* "to whom the money is to be paid, &c.

"8. This amount will then be paid regularly, month by month, by the various "Executive Officers of the districts where the men have been entertained. On the occur- "rence of any casualty amongst the men, it should be reported at once to the Commis- "sariat Officer of the district, who will discontinue the payment of the family remit- "tance from date of decease.

"9. To guard against over-payments from men becoming casualties, payments to "families will be made one month in arrears; for instance, on 1st January for November, "allowing December for time for notice.

"10. The amounts paid will be charged off at once on acquittance rolls as a charge "against the Imperial Government, Abyssinian Expedition. Lieutenant Smith will charge "only the balance of their pay, after deducting the sums noted to be paid in this country. "For instance, if a kahar from Lucknow wishes four rupees monthly to be paid to his "family, the Executive Commissariat Officer, Lucknow, will charge four rupees in his "account, and Lieutenant Smith will charge four rupees in his account. Lieutenant "Smith will bear in mind that all such payments will continue to be made by the "Executive Commissariat Officers of districts until they receive intimation from him "of the death or desertion of any of the kahars in question.

"11. Previous to starting, Lieutenant Smith will transmit to the Executive Commis- "sariat Officers concerned a general roll, embodying the details of each certificate of "which the amount will be payable by the Executive Commissariat Officer.

"12. A form of family remittance certificate is sent herewith.

"13. One such certificate is to be prepared for each individual, to be delivered at "the person in whose favour it is granted, or sent to the person by the granter, or sent "to the paying officer for delivery to the person.

"14. The amount of the family certificate may be to the extent of two-thirds of the "net monthly receipts of the granter.

Discipline and treatment.

"15. *Discipline and Treatment.*—The men, while kept under strict discipline, must "be treated with every consideration; every precaution must be taken to see that they "receive their regular supply of rations; that they are attended to promptly when they "require medical treatment; that their loads are not excessive; and that they are not "beaten or ill treated by any one. Application will be made for a Native Doctor to be "attached to the corps.

"16. *Constitution.*—The men to be formed in regular companies of 100 each, with "one sirdar and four mates, care being taken to keep the men of one district in the same "company as much as possible. In detailing men for separate employ, care should be "taken to send them by complete companies and half companies. Each company of 100 "men will have its distinguishing number, and the number of the company to which each "man belongs should be marked on his coat or jacket.

"17. *Establishments.*—Lieutenant Smith will be allowed—

Establishment.

"One Warrant and one Non-commissioned Officer.
One Gomashta.
One Assistant.

"No peon seems necessary, as the kahars will act as orderlies.

* The amount of the certificate was to be made payable to two holders, the second being paid in the event of the decease of the first.

" 18. Lieutenant Smith will be allowed transport for his baggage animals; scale not " yet fixed.

" 19. Sanction has been asked for a staff salary of 300 rupees for Lieutenant Smith, " and for transport at public expense for a charger for him; also for an increase of 50 per " cent. on their pay to the warrant and non-commissioned officers, and for free rations " to them. The usual office allowance in the field, 257 rupees, may also be drawn by " Lieutenant Smith.

The following report by the officer who raised the Bengal Cooly or Kahar Corps and was in charge of it throughout the operations explains further details :—

Report by Lieut. Smith on the working of the corps in Abyssinia.

" Under instructions received by the Commissary-General, Bengal Army, from the " Government of India, the enlistment of men to form a Cooly or Kahar Corps for service " in Abyssinia was commenced in the beginning of October 1867, and stopped on the 14th " December following. The enlistment took place at the stations of Allahabad, Lucknow, " Cawnpore, Fyzabad, Benares and Dinapore, by the Commissariat Officers at these " stations, and the men when passed by Medical Officers as fit for the service required, " were collected at Allahabad, where the corps was organized, and from where it was " dispatched *viâ* Calcutta to Abyssinia.

Enlistment.

" It being considered desirable that all the men of the Corps should, if possible, be " able to assist in moving the sick with the force in Abyssinia, when required, men of the " bearer (kahar) caste accustomed to carry dhoolies, were at first only entertained, but " afterwards, when it was found difficult to collect sufficient kahars, a few coolies were " enlisted. All the men, however, engaged to make themselves generally useful in what- " ever manner after their arrival in Abyssinia, their services would be most needed, such " as in carrying the sick, cutting grass for horses, making roads, carrying loads to and " from the shipping, &c., &c.

Pay.

" The kahars were enlisted on the agreement that, whilst absent from India, their " rates of pay would be :—

" For Sirdars, at Rupees	15	per month each.
" Mates	"	12	"
" Kahars	"	10	"

" and that they would also receive free rations and a suit of warm clothing, and two " blankets per man.

Strength on embarkation.

" The strength of the corps on its embarking for Abyssinia in December, 1867, and " January, 1868, was as follows, viz. :—

" 3 European Commissioned Officers.
3 European Non-Commissioned Officers.
3 Native Gomastahs.
2 Office Writers.
2,041 Men of all classes (Sirdar, Mates and Kahars).

Medical Establishment.

" A Native Doctor with Hospital Establishment was sent in each ship in which " kahars embarked, but on arrival at Zula, the Native Doctors and establishments were " transferred to other duties.

" According to the orders of Government, the strength of the corps should have " consisted of 20 companies of 100 men each, with one Sirdar and four Mates attached to " each company, or in all of 2,100 men, but the corps had to embark before the full " number of men could be collected.

Transports.

"The Kahar Corps embarked for Abyssinia at Calcutta in the sailing transports "'India,' 'Queen of India,' and 'Ophir,' and steam transports 'Oriental,' Himalaya,' and "'Punjab,' between the 20th December 1867, and 8th January, 1868, and landed at Zula "in the latter part of January and beginning of February, 1868. I regret to have to

Sickness in transport India.

"report that on the voyage, fever of a bad kind broke out amongst the men on board of "the ship 'India,' and a large number of men died before the vessel reached Zula, and "most of the others arrived in a very sickly state at Zula, where they had to be kept "detached in a separate camp, where many died.

Deaths.

"Out of 417 men that embarked in this ship, 131 died on board, or after landing—

Effective strength.

"251 had to be invalided and sent back to India from Zula, and 35 only remained fit for "duty. From this cause the effective strength of the Kahar Corps after landing was "only about 1,650 men.

"Immediately after the disembarkation of the Kahar Corps at Zula, two of the "Commissioned Officers, and all the non-commissioned officers, were removed from the "corps, and appointed to other duties in the Land Transport Train and Commissariat "Departments, and by the orders of his Excellency the Commander-in-Chief, more than

Duties performed.

"a thousand of the men were attached to various Departments and hospitals, and sent "with the force up to the highlands, the rest of the men (excepting those who came in "the ship 'India') were employed in working for the Commissariat Department at Zula, "at the railway sidings, Kumayli, &c., &c., where a very large amount of the Commissariat "was performed by these kahars work.

"A large proportion of the kahars, who went with the troops into the highlands, "served with the several Field and Regimental Hospitals, as dhooley bearers and dhandy "bearers, some were employed by the Meteorological and Survey Departments, 133 by "the Land Transport Train, and the remainder by the Commissariat Department at its "various depôts of stores, &c. I am unable to give a detail of the men attached to "each hospital and department, as the numbers employed were continually being altered, "owing to various causes, such as establishments being suddenly increased or reduced, "men falling sick and being left behind in hospital, death, &c., &c.

"I regret I have no reports from the officers under whom the kahars served in the "highlands, to show how the men worked, but from conversations I have had with some "of those officers, I am led to believe that the kahars worked willingly and did much "useful service, but that many of them were unable to bear up long under the hard work "they had to perform in such a trying climate, and in consequence large numbers were "usually under treatment in the different hospitals.

"Of the men detained at Zula, many were employed daily on the bunders in landing "stores and conveying them to the Commissariat yards, others in loading and unloading "railway trucks, working in the Commissariat yards, &c., &c. All these kahars being "under my orders worked, I can say, most willingly without complaint, and well. Many "of these men also, owing to the trying nature of the climate, hard work, and food of a "different kind to what they had been accustomed to in India, were constantly on the "sick list, several died and many were invalided.

Conduct.

"During the time the kahars were absent from India they carried out to the best of "their ability the terms on which they had been engaged, and made themselves generally "useful in every way they could be employed; they raised no caste objections on board "ship or in Abyssinia, and, as I have already stated, did much good service.

Re-embarkation.

"The Kahar corps being amongst the last to leave Zula at the end of the Expedi- "tion, embarked in June 1868, in the steam transport 'Bengal' and ships 'Ophir,'

'Callerhœa,' and 'St. Albans,' and returned to Calcutta, where, on arrival, the men were "paid up, discharged, and sent to their homes.

"In conclusion, I may state that the strength of the corps on its return to Calcutta was only 1,261 men, during its absence from India 235 men having died and 545 having been invalided and sent back sick to their homes *vid* Bombay." Number of men re-embarked.

The following statement, dated the 15th March, 1868, shows the distribution of the Bengal Kahar Corps in Africa, and how the men were employed:— Distribution in Africa.

To whom transferred for Employment.	Sirdars.	Mates.	Kahars.	Sirdars.	Mates.	Kahars.
Total strength embarked for Abyssinia	..	..	..	19	79	1,943
Hospital, 2nd Grenadiers, N. I.	..	..	8			
Commissariat Department, 1st Division	..	1	25			
Hospital, Royal Naval Brigade	..	..	6			
3rd Field Hospital, British troops	1	2	64			
Meteorological Department	..	1	9			
3rd Department Hospital	1	..	36			
Staff Hospital, 2nd Division	..	1	30			
Hospital, 18th N. I.	..	..	6			
Staff Hospital Zula	..	..	6			
Transport Train Department	..	5	127			
Commissariat Department, Senafé	..	12	300			
1st Field Hospital, British troops	1	2	60			
2nd " "	..	2	48			
2nd " Native troops	1	3	80			
Artillery (2), Mountain Train Battery	..	1	32			
" B (2) "	..	..	5			
General Hospital, Kumayli	..	..	6			
Trigonometrical Survey Department	..	1	20			
Executive Commissariat Officer, Rahagedi	..	1	25			
" " Upper Zura	1	1	25			
" " Undui Wells	..	1	25			
Hospital, 45th Regiment	..	..	18			
3rd Dragoon Guards	..	..	2			
Total transfers	9	34	963			
In hospital, Zula	1	3	86			
On temporary command	..	1	19			
In fever camp	2	10	181			
Invalided to India from fever camp	2	1	96			
"Unfits" invalided to India	..	4	49			
Died up to the 14th March, 1868	..	5	146			
Deserted	..	..	1			
Present fit for duty at Zula	5	21	402			
				19	79	1,943

CHAPTER XXXVIII.

DESPATCHES OF SIR ROBERT NAPIER.

No. 1.

Sir Robert Napier to the Secretary of State for India.

Right Honourable Sir, *Magdála 14th April.*

I have the honour, in continuation of my despatch dated the 5th instant, to report, for your information, that it was necessary to halt on Talanta until the 9th instant, to concentrate the force and gain information regarding the state of affairs to my front, and generally around me. The Chiefs of Talanta and Daont both visited me during that time, and, principally through the personal exertions of Captain Speedy amongst the villages of Daont, and the endeavours of M. Münzinger, considerable quantities of grain were brought into our camp.

The rival Queens of the Gallas.

On the 7th I received a letter from Imam Ahmed, son of Masteeat, one of the rival Queens of the Wollo Gallas. The influence of the Imam extends over thousands of predatory Mahommedan Horse, whose country lies around Magdála. He is the virtual Chief of the subjects of Masteeat, though the latter's own authority is also great. Masteeat is the rival of Werkait, another Queen of the Gallas, whose nominal ascendancy is at present established, through the assistance of Menelek, King of Shoa, though the majority of the Galla people support Masteeat. Information had reached me that Masteeat had very recently made friendly advances to Theodore, thinking this, no doubt, a good opportunity of enlisting his influence on her side against Werkait. Theodore is said to have accepted the presents she had sent him. Notwithstanding this alleged intrigue, the letter addressed to me by the Imam, her son, gave expression to feelings of utmost detestation on the part of his family towards King Theodore. As it was very possible that Theodore might flee from Magdála, it seemed to me of importance to secure the co-operation of a tribe possessed of so much power as the Gallas, in preventing his escape. It was chiefly with this object that I had procured the appointment to the Expedition of Meer Akbar Alee, of Hyderabad, in the Dekkan, whose services have been already referred to, and who, as a Saiad who has visited Mecca, was well adapted to attach the followers of Masteeat to our cause. He was despatched accordingly to Imam Ahmed, bearing a reply to the Imam's letter, together with a horse and other gifts. Copy of the translation of the letter appended (Appendix A.) News of his interview with Imam Ahmed and Masteeat has not yet been received, but the impression produced upon the Gallas, by his arrival amongst them, has apparently been all that could be wished. There seems every reason to believe that Theodore's return to Magdála, after his attempted flight, under circumstances which will be detailed further

Mission to Queen Masteeat.

on, was owing to the way in which the hills around the fortress were occupied by the Gallas.

On the 9th I advanced towards the banks of the Bashilo, and encamped near the edge of the Talanta Plateau, from which could be seen, in the midst of a vast panorama of mountains and valleys, two of the spurs, namely, Selassie and Fahla, of the mountain, of which Magdala forms the third spur Magdala itself was, from this position, concealed by Fahla and Selassie, and was distant about 12 miles from where we were. Heavy rain fell during the afternoon, and the night was very cold. The Bashilo, 9th April.

On the following morning, the 1st and 2nd Brigades proceeded to cross the Bashilo. The river lies at the bottom of a deep valley, among the mountains. The descent is in some places very steep, and represents a fall of about 3,900 feet, very irregularly distributed in 4½ miles. The bed of the river itself is broad and rocky, and a considerable and now muddy stream flows in it at present, reaching nearly to our horses' girths. The ascent on the opposite side was very difficult. Theodore had lately conveyed his guns across the valley, and had constructed a road, which facilitated our passage. But the ascent was so severe, that perhaps this day's march was even more trying than any of the former ones to our troops.

No reply had been received from the King to my letter of the 3rd, copy of which accompanied my last despatch. Neither had any means of conjecturing how he meant to receive us. Several copies of my letter had been sent to him, but we had not learned if he had received any of them, though it has since been ascertained that a copy was placed in his hands on the day we were crossing the Bashilo, and had caused an outburst of anger at a servant of Queen Victoria having presumed to address him. Letter to King Theodore.

Before crossing the Bashilo, I had caused to be prepared a second letter, of which a copy is attached (Appendix B.), intending that it should be forwarded, if occasion offered. As it proved, however, no opportunity of sending it occurred.

At four o'clock on the 10th instant, the head of the column, after traversing upwards of 10 miles of mountain and valley, had reached the plateau of Affijo. This plateau looks down upon the Arogie plain, on the other side of which rises the mountain height of Fahla. This mountain has an elevation of about 1,000 feet above the spot which we had reached, and on its ridge the King had placed seven guns. It was not until shortly before these opened fire upon us that we were aware of their being in position there. Owing to the very great height from which the guns were fired, the first round shot fell near where the column had halted, and our position, though distant over 3,000 yards, was within the extreme range of all the heavier guns. Shortly after the King's artillery had commenced to play upon us, large bodies of Abyssinians were seen descending the steep face of the mountain to attack us. The details of the engagement which ensued will appear from the official report, forwarded in a separate form. Our assailants showed so much bravery, that it was believed at the time that Theodore was leading them in person. But this was not the case. The King himself remained on the height, directing the fire of his troops. Our shells, and rockets, and Snider rifles taught the enemy a lesson which will long be remembered in this country. Their loss is computed at 700 killed (and 1,200 wounded), including many Chiefs of note. Advance to Affijo, 10th April. Engagement at Arogie.

It was nearly dark before the assailents were completely driven off, and the fire of their artillery silenced. A suitable position having been taken in the immediate vicinity, the 1st Brigade bivouacked for the night on the ground, and the wounded were attended to. Our own loss amounted to only 20 wounded. The night passed without any alarm, the enemy, as afterwards appeared, having become paralysed by the blow which had been inflicted on them.

Arrival of Lieutenant Prideaux and Mr. Flad in camp, and negociations with King Theodore, 11th April.

The next morning, Lieutenant Prideaux and Mr. Flad appeared in my camp, on the part of King Theodore, from whom they delivered verbally the message, that, till yesterday, he had thought himself the greatest man in the world, but had now found out that there were others stronger than he, and that he desired to be reconciled to our Government.

In conversation with Mr. Flad several facts regarding current events were noted. The numbers of the enemy in the engagement of the day previous was estimated at between 6,000 and 7,000. About 3,000 of these were musketeers, armed chiefly with matchlocks, and there were upwards of 1,000 soldiers in addition who carried percussion muskets. There was no regular Cavalry, but the Chiefs of the army were all mounted on horses or mules. The Europeans assert that the guns were not served by them, but by Abyssinians. Theodore's favourite cannon, which he had named after himself, burst on the first discharge. The fire of the rocket battery had produced a powerful effect on the King's mind, and his impatience, after the battle was over, to avert the danger of a second attack by effecting a reconciliation with us was great. He had displayed to the last the characteristic cruelty which prevents us from in any way regretting his fate. There is no room for doubt that about 200 Abyssinian prisoners in confinement for very trivial offences were put to cruel deaths by his order the day before the battle. He had commenced the massacre with his own hands. The remains of the victims are still to be seen at the foot of the rock from which they were hurled.

Lieutenant Prideaux and Mr. Flad, in conveying to me the King's message, came accompanied by the Dejach Alamee, son-in-law of Theodore. I avoided entering into unnecessary conversation with his messengers, and sent my answer in writing, as shown in copy of my letter which is appended, marked C.

In the course of the same day Lieutenant Prideaux and Mr. Flad returned to my camp, with an unfavourable report of the way in which my reply had been received by the King, who, on understanding its purport, had become enraged, and ordered his former messengers to carry back to me a document which he had caused hastily to be written by his scribe, and which, on opening, I found to contain, enclosed with it in the same cover, my own letter of that morning, which the King had thus returned to me, he having conceived himself insulted, I am told, by my having presumed to address him at all. The Dejach Alamee did not on this occasion accompany Lieutenant Prideaux. Translation of the paper sent me by the King will be forwarded hereafter. It was not in the form of a letter, because he believed it beneath his dignity to hold such correspondence with me. Neither was it sealed.

It was very trying, in the aspect presented at this particular juncture by our relation with the King, to persevere in the course which I had adopted as the right one, since the lives of so many of our countrymen seemed to be endanged by that course. Nevertheless, I felt that I had no alternative, and therefore requested Lieutenant Prideaux and Mr. Flad to return to the King, and say to him that I could receive no further communications from him until my demand of that morning had been complied with.

But happily the King's own mind had undergone a kind of reaction almost as soon as he had despatched Lieutenant Prideaux with the paper referred to. He had recoiled from the possible consequences of his act, and after an attempt to commit suicide with a pistol, which was prevented by his attendants, had sent off Mr. Mayer, one of the European prisoners, to announce to me that all the captives whom we sought were on their way to my camp. Lieutenant Prideaux, while returning to the King, met Mr. Mayer coming down the mountain with this most unexpected intelligence, and he

and Mr. Flad, turning back with Mr. Mayer, again appeared at my tent, bearing the joyful news, but not charged with any message from the King touching his own submission to Her Majesty. Soon after dark, Mr. Rassam himself arrived in camp, a free man; and with him came Consul Cameron, Dr. Blanc, Rev. Mr. Stern, Mr. and Mrs. Rosenthal, Mr. Kerans, and Pietro. These had all been liberated. They were escorted on the part of the King by Mr. Mayer, Mr. Waldemaier, Mr. Saalmüller, and Mr. Moritz, artizans, and by the Dejach Alamee and Aito Samuel. It was not understood whether the German artizans above-named were expected by the King to return to him or had been liberated also; but I judged it better that they should return to Magdāla the next morning, until regularly discharged by Theodore.

Although matters had thus assumed a most hopeful aspect, yet there remained ground for anxiety. Mrs. Flad, whose Christian fortitude during all her trials had gained for her universal esteem, was still in the King's hands, and so were many other Europeans for whom we were bound to take thought. It was believed that they too had been liberated, and had been prevented only by illness or other causes, not resting with the King, from proceeding to our camp. Still the uncertain and dangerous temper of Theodore was too well known to permit of our thinking the life of any one safe while within his reach.

A Letter from King Theodore. 12th *April*, offering a present of cattle.

Early next morning I received, by the hands of the King's scribe and Mr. Bender, one of his German servants, an Amharic letter, which, on being translated to me verbally by Mr. Rassam and Aito Samuel (the latter rendering it from the original into Arabic, and the former, interpreting the Arabic again into English) was found to be an apology for the rude missive of the previous day. The King endeavoured to explain away the tone he had adopted in the latter, by informing me that that had been written after he had made up his mind to take away his life. He related how his attempt to carry out his design had failed, and that now he desired friendship, and was prepared to send down to us, at once, every European, along with an offering of a few cows, as it was the Easter feast. My reply was conveyed verbally because of my wish to avoid further correspondence with the King, whom I once more referred to my written communication of the day before. Mr. Rassam and others, however, acquired the impression that the cattle mentioned in the letter, had been accepted by me, as they certainly would have been, had the offering accompanied or signified His Majesty's acquiescence in my proposal of the previous day.

Verbal reply of Sir Robert Napier.

The Dejach Alamee, who had spent the night in my camp, carried back to Theodore my verbal answer to his second letter, and with the Dejach went Aito Samuel, Mr. Flad, and the four Germans who had escorted down Mr. Rassam's party the evening before. I did not think it necessary that Lieutenant Prideaux should return to Magdāla on this occasion, because he was a member of Mr. Rassam's party, and therefore had been duly dismissed by the King.

Mr. Flad's account of the King's reception of Sir Robert Napier's propositions.

Mr. Flad has reported as follows what took place when he and his companions reached the King's presence with my message, on the morning alluded to. The Dejach Alamee delivered my compliments to the King, my acknowledgment of the arrival in my camp of Mr. Rassam's party, and my reiterated demand that the remainder of the Europeans should be sent to me. Theodore at once replied, "Well, I give every one of "them permission to leave Magdāla."

The King then asked whether, at the time when Mr. Flad and his companions had left my camp, his scribe and Mr. Bender had arrived there with his letter, Aito Samuel replied, "Yes; your letter was presented to the Commander-in-Chief, and translated." The King inquired what answer had been given about the offered cattle. Samuel replied

Arrival of oxen and sheep at the British camp, 12th April.

that I had signified my willingness to accept them. His Majesty then ordered 1,000 oxen and 500 sheep to be taken to my camp. When it was reported to me that the animals had arrived at one of the outlying piquets, I gave orders that they should not be admitted within my piquets until His Majesty's full acceptance of my conditions of the previous day should enable me to receive them, or assume towards him any friendly bearing whatever.

The remainder of Europeans arrive in camp, M. Bardel excepted.

In the course of that day (the day before yesterday) every European in the King's hands arrived safely in my camp, with the exception of M. Bardel, who, though liberated by the King, had been prevented, I believe, by severe illness, from leaving Magdála, and who had not even sent me a message to explain his delay.

But no sign was made by the King of acceding to the still more important demand that had been made of him, and submitting himself to Her Majesty the Queen. The considerations which, with the lives of so many of our countrymen in his hands, had impelled me to impose this condition upon him, had lost none of their force now. It was essential for the vindication of our national honour, which he has so grossly insulted, that he should be removed for ever from his place. Moreover, we could not have reached Magdála in this season unless we had been aided by the country. Kassai's supplies of flour had rendered us for the time independent of the failure of Zula to supply us. The grain of Enderta and Agame had enabled our transport animals to live and advance, but this aid was given in the full belief that we would rid the people of Theodore; and had we failed to do so, we should probably have had to fight our way out of the country. No doubt can from the first have existed in Theodore's mind as to the purport of my demand, because the letter conveying it was translated to him by his own servants, and his remarks at the time showed that he understood every word of it. His failure to submit himself, therefore, left no other course open to us than to proceed towards him as an enemy.

A prize of 50,000 dollars set upon the King's capture.

Early yesterday morning intelligence, which seemed reliable, was brought to me that His Majesty, with about 50 followers, had fled from Magdála during the night. This was confirmed by the appearance of several Chiefs, with an offer to surrender into our hands the two strong outposts of Fahla and Selassie.

I at once sent word to the Gallas, offering a reward of 50,000 dollars for Theodore's capture, should he really have escaped; and as soon as measures had been taken for the protection of the Chiefs and people among the King's adherents who might choose to surrender, I proceeded to occupy Fahlá and Selassie, with the same force and in the same order that I had designed for the assault.

While the column was ascending the mountain, contradictory statements regarding Theodore were brought to me. Hardly had one messenger confirmed the report of his flight, than another would come with the information that he had returned to Magdála, and was busily engaged in massacring the Abyssinian prisoners confined there, to be followed by a third, stating that he had committed suicide. Fahla and Selassie were occupied by our troops, without any resistance being offered. The people everywhere laid down their arms and approached us with all confidence. It is impossible to form a correct estimate of numbers; they covered the whole face of the hill, and the paths leading from it were thronged for many hours during their migration. It is believed that the numbers could not have been less than from 25,000 to 30,000, of whom about a third were armed men.

The two hills formed a very strong position, and, if they had been defended with ordinary determination, would have caused very serious loss of life in their capture.

Both of them communicated with Magdāla itself; but what was the state of matters in that stronghold remained as much a problem as ever.

A desultory fire from small guns had been maintained from the walls for some time after Theodore's followers had retired within the fortress. It was said that Theodore himself, with a few of his soldiers, had galloped out of the gate on the first approach of our troops, and challenged a party of Cavalry to combat; but it was not possible to say certainly if it was he, though it now seems probable it was. He did not, however, approach near enough to give an opportunity of intercepting his retreat to the fortress. With the help of our telescopes, a good view of the interior of Magdāla was obtained. Whatever number of defenders the fort contained were studiously concealed. It was plain, however, that the place was not abandoned, as the gate which had been open on our first approach was perceived to be closed. A few figures were seen in different parts of the fort, and one officer thought he recognized Theodore himself.

About noon I directed a sharp cannonade to be opened upon the gates of the fortress, without, however, calling forth any demonstration in reply. In the absence of such, and in consideration of the numbers of women and children in Magdāla, it was not thought necessary to advance our guns near enough to produce anything like a general destructive effect upon the place. Magdāla cannonaded.

About 4 P.M., the 33rd Foot was ordered to advance to storm the fortress. Led by Major Cooper, and keeping up a continuous fire upon the defences, this fine regiment soon surmounted the steep precipitous cliff which lay between them and the outer gate, notwithstanding the heavy fire of the garrison from behind their defences. Here their progress was arrested, and it was found the gate had been blocked up from within, by means of large rocks piled in the gateway. A company of Royal Engineers, under the command of Major Pritchard, had accompanied the advance party. But it was easier to enter the citadel by clambering, with the help of scaling ladders, over the fortifications on either side, which consisted of a masonry wall and very formidable thorn defence surmounting a scarped rock, than it would have been to blow open the gate. When the place had been entered, another gate at the end of a long tortuous passage between two lines of rock had to be carried. Altogether this fortress is one of the strongest, even when its own proper defences had been reached, that I have ever seen. Its position, with reference to its outworks of Fahla and Selassie, adds so much to its strength, that it might be made quite impregnable. If Theodore had been properly supported by his soldiers, we could not have escaped very severe loss in entering it. As it was, however, his army had been so completely demoralized by the severity of the loss inflicted on them two days before that the troops remaining faithful to Theodore were very few, and when they found that their unscientific defences gave them no opportunity to inflict loss on the assailants without exposing themselves, which our rapid fire rendered fatal to them, on the death of the King all the survivors abandoned resistance, and made their escape by the Kaffirber Gate. The kind treatment bestowed upon their wounded had also produced a strong impression on their minds. Capture of Magdāla.

It has since been ascertained that Theodore left Magdāla that morning, intending to seek safety in some distant province. But only a few Chiefs followed him out of the gate, and with the fear of his mortal enemies the Gallas before his eyes, he could not venture to leave Magdāla with so small an escort. He, therefore, returned to his stronghold, determined to die there rather than perish among the Gallas. Attempted escape of Theodore.

Every armed man who met our column after the fortress had been entered fell under the fire of the Sniders; and the bodies of several Chiefs of distinction, who had King Theodore's body found.

remained faithful to their master to the last, lay close behind the outer and inner gates. Theodore himself was found lying dead some way up the narrow path which leads from the gate to the palace. A bullet had passed through his head. The Medical Report, of which a copy is herewith submitted (Appendix D.), will show that he is believed to have died at the last moment by his own hand.

His burial. Copy is submitted (Appendix E.) of a letter addressed to the widow of the Emperor. At her request, the remains of her husband have been interred under the orders of the officer commanding in Magdāla. No definite arrangements have yet been made for the disposal of her son, who is a boy of about eight years of age. Copy of translation of a letter which I have written to Dejach Gwangoo, brother-in-law of Theodore, is also forwarded (Appendix F). Replies have not yet been received to those two letters.

The property of the late King is being collected in the regular manner. His crown and royal seal have been taken possession of in Her Majesty's name, and will be forwarded to England by a suitable opportunity. Measures are being taken for the protection of the inhabitants of Magdāla. Theodore's guns have been destroyed by blasting, and the fortress itself will be dismantled.

The liberated prisoners, of whom a list is attached (marked G.), leave for the coast immediately; and I hope to commence my return march toward Zula on the 18th instant.

Every endeavour will now be used to convey the Expeditionary Army with the least possible delay out of this country.

Appendix A.

Copy of translation of a Letter from Sir R. Napier to Imam Ahmed, Chief of the Wollo Gallas (original in Arabic).—We salute you. We have received your two letters, and accept your friendly expressions with much pleasure. We have come thus far with the Army, by command of Her Majesty the Queen of England, to punish Theodorus for his ill-treatment of British and other European subjects. We are close to Magdāla, and will shortly attack that place. It is necessary that no means of escape should be left to Theodorus. We therefore write to ask you to collect your people, and close every place in your direction by which he might otherwise try to get away from the Amba. Should he try to fly through your country, we will most handsomely reward any one who will bring him to us. But if you close the passes on your side, he cannot fly.

To ensure successful co-operation, and to improve friendly communication, we would wish that some influential person, having your confidence, should be with us in our camp, to remain with us, and we would ask you to send such a person quickly.

We, on our part, have sent you a Mussulman friend, who has travelled in holy places, and is a person of estimation both among ourselves and among his own people. He will communicate to you our wishes on all points, and we hope he will be received well and honourably.

Appendix B.

Copy of Letter from Sir R. Napier to King Theodore, dated 10th April, 1868 (written before going down into Bashilo Valley, but not sent.—In order to avert unnecessary bloodshed, we recommend your Majesty to send into our camp forthwith an Abyssinian in your confidence, to whom we may communicate the views of Her Majesty the Queen of England.

Appendix C.

Copy of Letter from Sir R. Napier to Theodore, dated British Camp, Affajo, 11th April, 1868, sent in reply to the verbal message brought by Lieutenant Prideaux, Mr. Flad, and the Dajazmaj Alamee, the son-in-law of the King.—Your Majesty has fought like a brave man, and has been overcome by the superior power of the British Army.

It is my desire that no more blood may be shed. If therefore, your Majesty will submit to the Queen of England, and bring all the Europeans now in your Majesty's hands, and deliver them safely this day in the British camp, I guarantee honourable treatment for yourself and all the members of your Majesty's family.

Appendix D.

Surgeon Lumsdaine to Captain Tweedie, April 15th.—I have the honour to inform you that, by desire of His Excellency, the Commander-in-Chief, I went yesterday to Magdala, to examine the body of the late Emperor Theodore.

The examination was conducted in the presence of two priests, who were watchers, of Samuel the Agent, and of Dr. Blaffe, and was identified by all.

There was a gunshot wound at the back of the head; the inside of the mouth was blackened and scorched; the palate blown away, and a probe, passed in at the mouth, came out at the wound on the back of the head.

From examination of these two wounds, the internal and external, I am of opinion that death was self-inflicted.

Appendix E.

Copy of translation of Letter from Sir R. Napier to Ythegé Tooroo Wurk, 14th April, 1868.—His Majesty the late Theodore, King of Abyssinia, having fallen in arms against the British Government, it remains for us only to request that you will inform us of your wishes regarding the disposal of his body, whether you would like it to be buried by us with all due honour, or made over to you for interment as you may direct.

We would like to know your wishes also regarding the son of his late Majesty. It is to be feared that, in the present state of Abyssinia, the youth's life will be in danger at the hands of many persons who will aspire to the empire of Abyssinia. We are willing to take the child under our protection, and send him to England or Bombay to be educated, and we would suggest this arrangement to you as the best that could be made. Your own wishes regarding his disposal shall, however, be followed by us.

Appendix F.

Copy of translation of Letter from Sir R. Napier to Dejach Gwangoo, brother-in-law of Theodore, 14th April, 1868.—His Majesty the late Theodore, King of Abyssinia, having fallen in arms against the British Government, we ask you to inform us of your views regarding the disposal of all the members of his late Majesty's family, in order that your wishes may receive our consideration.

Appendix G.

For a list of the captives liberated, see Chapter XXI, page 81.

No. 2.

Sir R. Napier to the Secretary of State for India (received 19th June, 1868).

Commander-in-Chief's Office, Political Department,

Right Honourable Sir, *Camp Dildi, 30th April*, 1868.

March from Magdala to Dildi.

I HAVE the honour to report for your information, in continuation of my despatch, dated the 14th instant, that the Head-Quarters and Rear Guard of the Expeditionary Force recrossed the Bashilo *en route* toward the coast on the 18th instant.

2. A short halt was necessary on the Talanta Plain, in order to make arrangements for the march of the whole Force in suitable divisions to Zula.

3. On the 24th instant, the rear of the Army crossed the valley of the Jedda; the River Takazze has since been passed, and we are halting to-day to rest, after a very toilsome march yesterday.

Events at Magdala.

4. I will now revert to the events which took place at Magdala and in its neighbourhood subsequent to the date of my last Despatch. Anxious as I felt to abstain from further interference in Abyssinian affairs after the object of the Expedition had been attained, yet it was necessary for the sake of our national credit that due consideration should be shown for the large numbers whose interests and safety had centered in Theodore's existence, and who remained disarmed and unprotected, and exposed to merciless plunder and slaughter at the hands of the wild tribes which circumstances had, for the moment, converted into our allies.

Magdala offered to the Wagshum.

5. The disposal of the Fortress of Magdala first demanded attention. This strong position is situated geographically in the country of the Wollo Gallas, from whom it was finally wrested by Theodore about ten years ago. In his hands it has imposed an effectual check upon the encroachments of the Gallas on Christian Abyssinia. I desired, in the interests of Christianity, to place the stronghold in the possession of Wagshum Gobaze, the *de facto* ruler and principal Chief of this portion of Abyssinia. But when I had sent for his lieutenant, the Dejach Mashashah, the latter excused himself, in his master's name, from accepting the charge, alleging as his reason that it would require so large a garrison to hold it that it would be a source of weakness rather than of strength.

6. Wagshum Gobaze himself, notwithstanding his repeated invitations to us, through Brigadier-General Merewether, C.B., to come quickly to his aid, had removed himself and his army to a distant quarter before our arrival, in pursuit of objects of his own, and it was impossible for me to await a reply to the letter which I addressed to him on the subject of Magdala.

The fortress destroyed.

7. I therefore destroyed the gates of the fort, burned everything on the mountain that was combustible, and abandoned it.

8. Several claimants for its possession had, in the meantime, addressed me regarding it. One of these was the Chief of Daont, a small territory lying adjacent to Magdala. Werkait, one of the two rival Queens of the Gallas, had also put forth her claims, as likewise had Masteeat, the other and more powerful of the Galla Queens.

9. At the time when the disposal of Magdala was thus exciting so many hopes and desires, the widowed Queen of Theodore and her son were brought down in safety from the mountain, and placed within the protection of my camp; the removal of the disarmed garrison and released native prisoners was at the same time in progress.

The Galla Queen Werkait.

10. Shortly after the arrival of Werkait's letter soliciting that the fortress might be delivered to her, the lady presented herself at my picquets. Although it was evening, she was immediately admitted to an interview, and allowed to represent her claims.

She was greatly affected in revisiting a locality which had been associated with so many misfortunes to her family and people. She remarked to me, "We fought with Theodore "as long as we could, and when his power was too strong for us to resist any longer, my "son submitted to him, on receiving a promise of good treatment, notwithstanding "which he was inhumanly cut to pieces, and thrown over the precipice of Magdāla; and "now I have come to see the grave of my enemy Theodore, and the place where my "son fell."

11. At this time, the offer of the fortress had been made to Gobaze's lieutenant, and his answer had not yet been received. Magdāla was still the scene of military operations while our troops were engaged in destroying Theodore's cannon, and the exodus of its former inhabitants continued in full progress. Therefore it was not thought expedient that Werkait's wish to ascend the mountain should be indulged at such a time. Almost before her story was concluded, intimation was received that her rival Masteeat was also in the neighbourhood, and on her way to offer her congratulations and submit her claim.

12. At first I hoped to be able to make peace between these two rival Queens; but, when this was hinted at to Werkait, she said, "When two persons are striving together "for a crown, how can peace be made between them? If Masteeat were to make peace "with me to-day, before you, she would betray me to-morrow." The rival Queen Masteeat.

13. The news of Masteeat's approach caused great uneasiness amongst Werkait's escort and adherents; and, after a second interview with me, during which she exhibited symptoms of much distress, she took a hasty departure, apprehensive lest she should be intercepted by her more powerful and more fortunate rival; more fortunate because her son is alive, and the centre of the hopes of a large body of the people, while to poor Werkait there remains only the memory of her son, so treacherously slain by Theodore. Suitable presents were made to her, as she took her leave; and, shortly after her departure, Masteeat arrived with her son Imam Ahmed, and expressed no small gratitude and rejoicing at Theodore's fall. She had responded very effectually to our request to close all avenues by which the late King could have escaped, and thus she came to us in the character of an established ally. To her request for the possession of Magdāla I was able to answer that Gobaze's lieutenant, having declined to receive it, I would abandon the place, after dismantling it, and burning all of it that could be so destroyed, as a mark of the anger of the British at the ill-treatment of our countrymen, as well as of our abhorence of the cruelties which Theodore had committed there. To this the Queen replied that indeed nothing but fire could purify it. On my asking her if she could make peace with Werkait, she answered that she would gladly do so, but that it was impossible, because if Werkait were to swear friendship on the Koran itself to-day, she would violate her oath to-morrow.

14. Next to the question regarding the disposal of Magdāla arose the necessity of sending away the vast number of Abyssinians who had laid down their arms, together with the other inhabitants of Magdāla and Islamgi, including very many women. Many of these appeared to possess mules and property of their own. They were escorted through the Arogie Pass, across the Bashilo and the Jedda, and as far as Bet-Hor, by patrols of our troops. From Bet-Hor they began to diverge to their own several districts, and by the time our column had crossed the Takazze they had all disappeared. Departure of the former inhabitants of Magdāla.

15. Certain others of the inhabitants of Magdāla remained longer under British protection. Such were the family of Theodore, the political prisoners whom we had released, and a few chiefs and employés who were more especially connected with Mr. Rassam and his party.

Queen Masteeat occupies Magdāla.

16. Advantage was taken of our friendly relations with Masteeat to obtain from her safe conducts and the promise of protection for as many of the people of Magdāla as had occasion to pass through Galla territory on their journey home. A son of Saheela Selassie, named Dargeeh, who had long been confined in Magdāla, was made over to her care, along with a few other natives of Shoa similarly circumstanced, in order to be escorted to Menelek's capital. Masteeat had also undertaken, at my request, to receive charge of certain Abyssinians who had been wounded in the engagement of Arogie, and who were still undergoing treatment in our field hospital. But when Major-General Sir C. Staveley and myself proceeded, on the morning of the 18th, to superintend the march of the last remaining brigade from the neighbourhood of Magdāla, it appeared that no arrangements had been made for the transport of these men. Masteeat herself had accompanied us a short distance on our way. When our wounded enemies were seen being transported by our own people, her followers were shamed into exerting themselves to provide attendants for them, and finding that five of their number were more or less connected with themselves, they took charge of these and removed them to their camp. The remainder were carried along with our column by spare muleteers from the Transport Train, as our regular hospital establishment had not the means of conveying them. We then took leave of Masteeat, who proceeded without delay to establish herself and her followers in the dismantled fortress of Magdāla.

17. A list of the principal political prisoners liberated by us on our occupation of Magdāla is appended, marked A. An opportunity was taken of receiving all of them who desired an interview with me, and advice suitable to their several circumstances was then tendered to them. Booroo Gooshoo, the Prince of Gojam was the first who was introduced. He bore in his enfeebled frame the marks of 14 years spent in captivity. It is probable that Gojam, which has generally formed a separate principality, will now become subject to this Chief. The Prince of Enderta, who is the maternal uncle of the present ruler of Tigré, was next presented to me. He left the following day for the court of his relative Dajasmaj Kassa. Wagshum Tiferri, who is said by some to be in reality the hereditary Prince of Wag, was then introduced, and afterwards other Chiefs of lesser note.

18. The widow of Theodore and her numerous attendants still remain, as it were, the guests of our camp, and will probably travel with us as far as the nearest point in our route to the lady's native district of Semen. Her severe illness during the past ten days has prevented my seeing her; but I trust she is now recovering under the care of the medical officer attached to my Staff, who has been detailed by me to provide for her comfort.

19. Translation is appended (marked B) of a proclamation which I have thought it right to issue to the Chiefs and people of this portion of Abyssinia at the present time.

20. Translation is appended also of a letter received a few days ago from Menelek King of Shoa, and of my reply (Appendix C); together with translations of my letters to Dejasmaj Wagshum Gobaze, and Dejasmaj Kassai respectively, announcing recent events (Appendices D and E).

A.

For a List, showing the principal Chiefs found confined in Magdāla, and released on the 13th April, 1868, see Chapter XXI, page 81.

B.

PROCLAMATION by His Excellency Lieut.-General Sir R. Napier, G.C.B., K.C.S.I., to all the Chiefs and People of Abyssinia, dated 27th April, 1868.

We proclaim that Dajazmaz Gobaze is the friend of the British. He appointed Dejach Mashasha his representative here. Those who would be treated as friends by the British Commander should obey Dajazmaj Gobaze, the officers appointed by him, and no other. We desire there should be peace in the country.

C.

Translation of a Letter from Negus Menelek of Shoa to General Napier, Chief of all the invading English Armies.

HAVING heard that you have come to Abyssinia, I was first willing to send to you in a suitable manner, but my enemies who are between us are stopping the road, and divide us, and so it became difficult to send a person of note, together with a man knowing the country.

Now I send you one of my servants with this letter, to make acquaintance with you. Far from being the enemy of the Queen of England, I am her friend. Before, I had intended to liberate the captives and come very near Magdāla; but as the business seemed impossible, and my Army had no more provisions, I returned to my country. Now I am far off, but I have no hesitation (to help). I like to help you, and want in nowise to trouble you.

As to my friendship with the Queen, it is not a matter of to-day. I had sent to London, and have received a friendly answer; perhaps you have heard it.

May God give you full welfare.

(L.S.) No date.

Copy of Translation of Letter from his Excellency Lieut.-General Sir R. Napier, to Menelek, King of Shoa, dated 28th April, 1868.

WE have received your letter with much pleasure. We had before heard of the endeavours made by you to effect the release of the European captives detained in Magdāla, and thank you much for them. We also thank you for the offers of help your friendship for our Sovereign the Queen of England prompts you to make. But we have now to convey to you the good tidings that the British Army entrusted to our command completely defeated the Army of Theodore at Arogie on the 10th April. The European captives were all then released; and on the 13th, Theodore having unwisely refused to submit to the mercy of the Queen of England, the amba of Magdāla was stormed and taken, and Theodore was found dead within. By our order, Magdāla was burned, and left a blackened rock, as a warning to all who injure subjects of Her Majesty the Queen of England. We should have been glad to have met you, but you are far off; and the object of our coming having been by God's blessing completed, we are now marching again to the coast. By Theodore's death, many Chiefs of Abyssinia have also been relieved from long confinement, amongst others, a relation of yours, Doorgeeh, and other natives of Shoa. We invited the good offices of Mastceat, the Queen of the Gallas, to provide him with safe escort to your country. Her promise was given, and we look to hear of

his reaching you safely. Your letter to Her Majesty the Queen was sent to London, and a reply forwarded to you by your messenger from Aden. This will have reached. May God have you in his keeping.

D.

Copy of Translation of Letter from his Excellency Lieut.-General Sir R. Napier to Dajazmaj Gobaze, dated 15th April, 1868.

How are you? Are you quite well? Thank God, I am well. I have to-day received your letter of the 2nd April, and congratulate you on your complete success over Tisso Gobaze.

I have now to inform you that Magdāla is in my possession, and all the Europeans held in captivity by Theodore are safe in my camp. Theodore is dead. His army was defeated by my troops at Arogie on the 10th of April, and on the 13th the amba was stormed and captured, Theodore being found dead within. Being well assured of your friendly feelings, I have sent for your deputy, Dejach Mashesha, and will, in the name of my Sovereign the Queen of England, give possession of Magdāla to him for you, in proof of my conviction of your sincerity, and in the confident expectation that the gift of this strong fortress, requiring so many troops and such great labour to obtain possession of, will lead you to acquiesce in the request I shall make to you when we meet, and in which the good of your country is largely concerned. I regret to have to inform you that my people have been molested, and the instructions for assistance you issued have not been carried out by the chiefs of Attala, Ashangi, Lat, Marawa, and Dildi. In all other places your orders have been well acted up to. I am about to return with my Army by Lasta, Womberat, and Wojerat. I should be glad to see you, and would request that a meeting may be arranged somewhere on that road between this and Wojerat.

E.

Copy of Translation of Letter from his Excellency Lieut.-General Sir R. Napier to Dajazmaj Kassai, dated 21st April, 1868.

After compliments.

We have now great gratification in informing you that on the 10th instant our Army met and utterly routed the Army of Theodore in the Arogie Plain, near Magdāla.

All the Europeans, with their families, who had been so long unjustifiably detained in captivity by Theodore, were released; and Theodore persisting in refusing to submit himself to Her Majesty the Queen of England, the amba was stormed and taken on the 13th, Theodore being found dead inside. Magdāla has since been destroyed and burned by our order, and left a blackened wreck. Many chiefs of Abyssinia were found in chains in the amba. These have been liberated and permitted to return to their homes. Amongst them were some of Tigré. On their arrival in your country we would commend them to your care and generous consideration. Having accomplished the objects for which we were sent, we are now about to return with our Army by the same route that we came.

We purpose on the way to have an interview with Dajazmaj Gobaze, and will not then forget what passed at the private interview with you at Hauzen, and trust our endeavours will produce results beneficial to the peace and welfare of all Abyssinia.

No. 3.

From Lieutenant-General Sir Robert Napier, G.C.B., G.C.S.I., Commanding the Expeditionary Force in Abyssinia, to the Secretary of State for India.

Commander-in-Chief's Office, Head-Quarters,
Camp Antalo, May 12, 1868.

Right Honourable Sir,

On the 3rd April, when encamped on the Wadela Plateau, I received intimation from the Chiefs of Talanta that Theodore, having moved from Magdāla and encamped on the plain of Arogie, was preparing for an expedition; letters from the captives also warned me to be on my guard.

Between the British Force and the Plain of Talanta lay the Jedda Ravine, 3,400 feet deep. As the passage of this formidable obstacle, so easily defensible, could not have been effected in the face of an enemy without serious loss, I made a forced march of 18 miles, crossed the Jedda, and established myself on the Plain of Talanta. The mere distance in miles gives little idea of the labour and fatigue of the march; the excessively steep descent and ascent, and the great heat, were very distressing for troops heavily weighted. Cross the Jedda, and encamps on Talanta Plateau.

Theodore, however, did not cross the Bashilo, but plundered and burnt the villages between that river and Magdāla, which has always been faithful to and trusted him.

From the edge of the Talanta Plain I obtained a distant but clear view of the position of Magdāla and its approaches. I was able, with a good telescope, to appreciate the formidable character of the whole position, and became aware that I should require all the Infantry that I could possibly collect to make the attack effective, and that every Cavalry soldier that I could bring forward would be necessary for the investment. Even with all the force that I could hope to gather up, I felt I could not complete the investment by sending a column to close the Kaffir Ber or southern gate of Magdāla, but I deputed an officer of the Intelligence Department, Meer Akbar Ali, to Masteeat, the Queen of the Wolla Gallas, to engage her to bring every man she could muster to close all escape on that side. Meer Akbar Ali's report will be forwarded, and will show how effectually he accomplished his mission. Mission to Queen Masteeat.

Reluctant as I was to incur any delay so near to Magdāla, these considerations, and the necessity of having supplies sufficient to carry me through the operations against that fortress, obliged me to defer crossing the Bashilo for several days.

I had not overlooked the probability of the unstable Abyssinian people despising the small postal detachments and the pacific demeanour of our troops, but the various difficulties of our transport and scarcity of our supplies kept me without sufficient troops to make the posts of communication as strong as the circumstances required. Each day, however, was bringing forward some accession of strength; and in the meantime I had endeavoured, by liberality and every means of conciliation, to engage the petty chiefs between Antalo and the Takazze River to maintain their friendly assistance in forwarding native convoys of supplies. It was the only course that gave chance of success; unfortunately it succeeded but partially.

Relieved from the pressure of our main force, the chiefs commenced to interfere with the Abyssinian carriers of our supplies, and to make attacks on our posts and convoys. The local carriage, which had enabled me to advance from Antalo, was suspended just at the time when its maintenance was most important: thus it happened that on the 4th of April I had only five days' supplies to depend upon.

The Force had left all its baggage at Lat, 100 miles in rear, taking on merely the

clothes in which they marched, and carrying greatcoats, blankets, and waterproof sheets; they had no other encumbrance than a bell tent for 12 officers or 20 soldiers; the daily storms which we experienced renders this shelter indispensable. The carriage so released was sent back for provisions to the points where native transport was doubtful, and gave me sure hope of ultimate relief from my commissariat difficulties, but the immediate urgency was pressing.

On the 2nd instant, I deputed Brigadier-General Merewether to the Tacazze, to arrange with the Chiefs there to bring in supplies of flour.

Major Grant was directed to return to Lat, and Captain Moore to Lake Ashangi, to remove obstructions which had arisen at those places. Captain Speedy and Mr. Münzinger proceeded, the former to Daont, the latter to the borders of Talanta that had been ravaged by Theodore, and through the exertions of these officers I was enabled to feed my cattle, and to obtain flour enough for 11 days' supply at 8 ozs. for each soldier. The native followers received wheat in the grain instead of flour.

Relying on the admirable spirit of my Force, I was prepared to commit myself against Magdāla with these means.

Description of Magdala.

Besides the view which I had obtained of Magdāla and its approaches, I received most valuable information from a chief named Beitwuddun Hailo, who had recently deserted from Magdāla. Having engaged in some intrigues with Menelek, King of Shoa, he knew well that his lot would be instant death on his master's arrival.

It is difficult to give, by description alone, a sufficient idea of the formidable position which we were about to assail. The fortress of Magdāla is about 12 miles from the right bank of the Bashilo, but the great altitude and the purity of the atmosphere exhibited the whole outline distinctly.

The centre of the position is the rock of Selassie, elevated more than 9,000 feet above the sea, and standing on a plateau called Islamgie, which is divided into several extensive terraces, with perpendicular scarps of basalt. A saddle connects these terraces with the hill called Fahla. Fahla is a gigantic natural bastion, level on the top, entirely open, and commanded by Islamgie. It domineers completely at an elevation of 1,200 feet over all approaches to Islamgie. The sides appeared precipitous, and the summit surrounded by a natural scarp of rock, accessible only in a few places, and from 18 to 20 feet in height.

Nearly concealed from view by Selassie and Fahla, the top of Magdāla was partially visible.

The road to Magdāla winds up the steep side of Fahla, subject to its fire, and to the descent of rocks and stones. One part of the road is so steep that few horses, except those bred in the country, could carry their riders up or down it. The whole road is flanked by the end of Selassie and the broad side scarp of Islamgie. Altogether, without taking into account Magdāla itself, the formidable character of its outworks exceeded anything which we could possibly have anticipated from the faint description of the position which had reached us.

The refugee chief, Beitwuddun Hailo, was very anxious that I should try the south side, at the Kāffir Bur (gate), from the opposite range, called "Tanta," saying, "If you "want to take Selassie, go from hence; but if you want Magdāla, you must go from "Tanta." This, however, would have been impossible; I had not force enough to divide, and I could not place this vast combination of natural fortresses between me and my direct line of communication. I also perceived that the real point to be taken was not Magdāla, but Islamgie, where Theodore had taken post with all his guns, and that Fahla was the key to the whole.

On the 7th I descended to the bed of the Bashilo, and reconnoitred the crossing.

The ordinary approach to Magdála is by the Arogie Ravine, which commences under Islamgie, and is bounded on its right by a spur which extends from Islamgie, in a serrated ridge, to the Bashilo. A similar spur from Fahla stretches to the water of the Bashilo, and bounds the ravine on its left.

The highest point of this ridge is about 2,000 feet above the bed of the Arogie Ravine.

The grand features of the ground rendered it impossible for me, with my small force of Infantry, to hold both sides of the ravine. I considered Fahla the key of the position, and determined to occupy the ridge, bearing, in different parts, the names of Gombage and Affijo, which leads to that imposing outwork. Established on this ridge I could operate on either side of Fahla, as might seem expedient on closer examination.

Between the 4th and 9th instant my Force was increased by six companies of the 45th Regiment, under Lieutenant-Colonel Parish, which, though long delayed for want of carriage, had marched from Zula in 25 days. A wing of the 3rd Bombay Native Infantry, under Lieutenant-Colonel Campbell, was detained seven marches in rear, owing to the urgent want of carriage, and I thus lost the services of an able officer and an excellent body of soldiers, on whom I had calculated for the attack.

Concentration of British Force above the Bashilo, 9th April.

On the 9th the whole Force concentrated on the edge of the plateau overlooking the Bashilo, which flows 3,900 feet below it.

Major Chamberlain, with the 23rd Punjab Pioneers, supported by a wing of the Beloochees, occupied the bed of the Bashilo, and repaired Theodore's road.

The signallers of the 10th Company Royal Engineers maintained communications.

The Royal Engineers and the Madras and Bombay Sappers, under Captain Goodfellow, made up the necessary provision of sand-bags, scaling-ladders, and bags filled with powder for the demolition of gates, stockades, &c.

As the only supply of water between the Bashilo and Magdála was under the enemy's fire, all the water-carriers of the Force were organized under command of Captain Bainbridge, Transport Corps, with two subalterns (Lieutenant Mortimer, Transport Corps, and Lieutenant Ramsbottom, Transport Corps), for the purpose of carrying forward regular supplies of water from the Bashilo.

The bandsmen and a party of Punjab muleteers were also organized under command of Captain Griffith, aided by Lieutenant Gazelee, Transport Corps, and furnished with stretchers for the removal of wounded men from the field.

Action of the 10th April.

Cross the Bashilo.

All preparations having been completed, I placed the Cavalry* under Colonel Graves to hold the Bashilo, but ready to advance, and moved the remainder of the Force across the river, under the immediate command of Sir Charles Staveley.

The 2nd Brigade,† under Brigadier-General Wilby, to remain in the bed of the Bashilo in support; the 1st Brigade,‡ under Brigadier-General Schneider, to occupy the

* 3rd Bombay Light Cavalry, 183; 3rd Regiment Sind Horse, 181; 12th Bengal Cavalry, 96.

† 2nd Brigade.—B Company, 21st Brigade, Royal Artillery, Captain Twiss, 103; G Company, 14th Brigade, Royal Artillery, Captain Murray, 94; Detachment 5th Company, 25th Brigade, Royal Artillery, Major Hills, V.C., 27; 33rd Regiment, Major Cooper, 694; 6 Companies 45th Regiment, Lieutenant-Colonel Parish, 325: Wing 10th Regiment Native Infantry, Colonel Field, 211.

‡ 1st Brigade.—A Company, 21st Brigade, Royal Artillery, Lieutenant-Colonel Penn, 86; Royal Naval Brigade, Captain Fellowes, 80; 10th Company Royal Engineers, Major Pritchard, 20; 1st Battalion 4th King's Own Regiment, Lieutenant-Colonel Cameron, 446; 23rd Punjab Pioneers, Major Chamberlain, 575; Wing 27th Beloochees, Major Beville, 259; 1st Company Madras Sappers, Major Prendergast, V.C., Royal Engineers, 70; Bombay Sappers and Miners, Captain Macdonnell, Royal Engineers, 283.

Gunborgi spur and advance to a suitable place for encampment, and also to cover a reconnaissance by the Deputy Quartermaster-General of the enemy's position.

The Deputy Quartermaster-General reported that the ascent to Gunborgi was extremely steep and difficult, and that the King's Road up the Arogie Ravine was easy and secure for the mountain guns and baggage; they were therefore ordered to take that route.

When the leading part of the column had reached Affijo I arrived at the front.

The King's Road emerges from the Arogie Pass, at a distance of 1,200 yards from Affijo, and 700 feet below it.

I ordered Major Chamberlain's Punjab Pioneers* to be sent immediately to cover the head of the pass, and the remainder of the brigade to be closed up as soon as possible.

The men were greatly distressed by the heat, the severe ascent, and want of water.

Action of Arogie.

Shortly after Major Chamberlain had taken up his position, the Naval Rocket Brigade, under Captain Fellowes, appeared, rising from the pass, followed by Lieutenant-Colonel Penn's steel battery, escorted by detachments of Infantry.

At this time the enemy opened his guns from Fahla and Islamgie, making good practice at the Punjabees, and at the position of Affijo.

Notwithstanding the distance, which was more than 3,000 yards, the enemy's shot ranged well into the positions, owing to the great command, and probably to excessive charges of powder; but the fire being a plunging one, no casualties ensued.

Almost simultaneously with the opening of the enemy's artillery, a large force was seen pouring down from Islamgie and the sides of Fahla, descending at speed the steep road and the faces of the mountains, until they filled the whole Plain of Arojie.

Many of the enemy were dressed in red, and almost bore the appearance of our own troops in the distance. About 500, principally chiefs, were mounted.

The Naval Brigade hastened up the road to Affijo, and as each rocket tube came into position it opened on the advancing masses of the enemy, who were startled, checked, and driven back at some points, but only to press forward at others.

I directed Sir Charles Staveley to bring forward the remaining infantry, which by this time had closed up, to repel the attack.

The 4th King's Own Regiment, under Lieutenant-Colonel Cameron, closely followed by Beville's Beloochees and the Royal Engineers, commanded by Major Pritchard, and the Bombay Sappers under Captain MacDonnell, R.E., descended rapidly the steep path leading down to the Arogie Plain with unrestrained expressions of delight at having at last their enemy before them.

Opening into skirmishing order they ascended a suitable slope which separated them from the Plain of Arogie, and immediately came into contact with the enemy, drove them back, in spite of the efforts of their leaders, in masses, on which the fire of the Snider told with terrible effect.

Several gallant attempts were made by the Abyssinians to rally, but many of their Chiefs fell, and they were driven down the slopes of Arogie, towards the ravines on our left front.

Retreat of Abyssinians.

A portion of them withdrew up the sides of Fahla, and taking cover in a thicket of cactus trees, opened a teasing fire on Staveley's right, causing some casualties.

Captain Fellowes, having maintained the fire of his rockets until masked by the advance of the Infantry, had been sent to support Sir Charles Staveley.

* 10th Company Royal Engineers; 1st Battalion 4th King's Own Regiment (seven companies); 27th Belooch Regiment (wing); K Company Madras Sappers; 2nd, 3rd, and 4th Companies Bombay Sappers.

The fire of the rockets, together with some volleys from Beville's Beloochees and the Royal Engineers, supported by two of Penn's guns, under Lieutenant Taylor, cleared Staveley's flank from further annoyance.

The rockets were then turned on the summit of Fahla; they were well directed, and, as I subsequently learned, produced a very great effect.

A party of the enemy attempted to pass round the sides of Affijo to turn our right, but were checked by a few rockets, and dispersed by the K Company Madras Sappers, under Major Prendergast, V.C., Lieutenant-Colonel Loch, with a detachment of the 3rd Bombay Cavalry, accompanied the Infantry in support.

Towards the left, Colonel Milward ascended from the Arogie Pass with Penn's Battery, escorted by detachments of the 4th King's Own Regiment under Captain Kittoe, and the 23rd Pioneers under Captain Paterson, at the time when the guns opened from Fahla and Islamgie. Engagement on the left flank.

On perceiving the troops of Theodore descending from Islamgie, Colonel Milward took up a strong position and opened fire from Penn's Battery. Major Chamberlain, who was holding the Pioneers in hand to cover the head of the pass, moved to his left and joined Colonel Milward.

A considerable body of Abyssinians bore down upon Milward's position. Notwithstanding the evident effects of Penn's guns they continued to advance with much determination and order.

Chamberlain with his Pioneers met their attack in the most prompt and spirited manner, driving them with great slaughter into the ravines to his left front; not, however, without gallant resistance on the part of the Abyssinians, who closed fearlessly with the Punjabees; the spear wounds received bore witness to the closeness of the conflict.

On the extreme left the enemy pressed in large numbers towards the head of the Arogie Ravine where the baggage had arrived.

The baggage master, Lieutenant Sweeny, King's Own Regiment, with great readiness, massed the baggage in a safe position, and the baggage guard, consisting of two companies of the 4th King's Own Regiment, and one of the 10th Native Infantry, under Captain Roberts of the former corps, until disabled, and subsequently under Lieutenants Abadie (11th Hussars) and Sweeny, were brought forward, and most effectually checked the attempt of the enemy to penetrate into the Arogie Ravine.

Arrested at the head of the ravine and driven back by the baggage guard, closed in upon by Chamberlain's pioneers and two companies of the 4th King's Own Regiment, whom Sir Charles Staveley had wheeled on to their flank, the enemy suffered most severely; large numbers were seen to fall from the admirably directed fire of the mountain guns.

Theodore's troops had advanced with the full confidence of men accustomed to victory; they had cast themselves off from their vantage ground to which there was no return.

They had been promised by Theodore that they should be enriched by the spoils of the English, and it was not without a stout resistance that they were finally driven off the field.

A heavy rain continued during the greater part of the action. The troops thoroughly wet and tired, but highly elated with their victory, bivouacked for the night, covering the road to Arogie Pass, and before daylight had re-occupied their commanding position on Affijo, from which they had descended to meet the enemy.

The wounded were promptly attended to under the direction of Dr. Currie, C.B., Inspector-General of Hospitals.

Many wounded Abyssinians were also carried off the field by our troops, and were carefully attended to in our hospitals.

The 2nd Brigade, which came up in the night, occupied the ground which had been held after the action by the 1st Brigade.

According to the best information, the probable number of the enemy was not less than 5,000, of whom at least 3,000 were the regular musketeers, and the remainder less efficiently armed. Theodore distributed new arms to his troops on the day preceding the battle.

Loss of enemy.

The loss of the enemy cannot be correctly estimated; 349 dead were buried in front of the left of our position alone, and exclusive of those who fell in Staveley's first attack, 30 very badly wounded Abyssinians were carried to our hospital.

Theodore's Lieutenant, Fetarareé Gabsie, and many Chiefs of note, were amongst the slain.

Nearly all night the calls of the Abyssinians to their wounded friends were heard, and the greater number of the latter were carried from the field. We saw a large number of wounded when Theodore's army surrendered.

British losses.

The British loss was only 20 wounded, two mortally; this disparity of loss resulted from the determined and persistent attack of the Abyssinians against a better disciplined and better armed force, not better armed, however, as regarded the 23rd Pioneers, whose smooth-bore is hardly equal to the double-barrelled percussion gun of the Abyssinians.

There was no hasty flight; the enemy returned again and again to the attack whenever the ground favoured them.

I issued orders to provide against the pursuit being carried too far up the hill, which could only have ended by our retiring and giving renewed confidence to the enemy.

Lieutenant Prideaux and Mr. Flad arrive in the camp.

On the morning of the 11th, Lieutenant Prideaux and Mr. Flad arrived in my camp, accompanied by Dejach Alema, a son in law and confidential Chief of Theodore, with a request for peace.

I replied that if Theodore would bring all the European captives to my camp, and submit to the Queen of England, I would promise honourable treatment for himself and his family.

The King refuses Sir Robert Napier's propositions.

Lieutenant Prideaux returned to Magdála with the letter containing these terms. In the course of the forenoon he returned again to the British camp with Mr. Flad, but without Dejach Alema; he brought a letter without seal or signature from Theodore, refusing my terms. My letter was returned.

I sent back Lieutenant Prideaux and Mr. Flad to intimate that no other terms would be granted.

I considered that a fuller atonement than the surrender of the captives, when they could be retained no longer, was absolutely required, and must be exacted; and, painful as was the thought of the possible consequences to the captives if Theodore's rage should become excited, I relied for their safety on the apprehension of a renewal of the conflict which demoralized Theodore's troops, and from which Theodore himself was not free, as was involuntarily betrayed by Dejach Alema. I relied also on my threat, which I impressed on Dejach Alema, of unrelenting pursuit and punishment of all who might in any way be concerned in the ill-treatment of the European captives. I pointed out how the power of Great Britain had already reached Magdála; that no corner of Abyssinia, however remote, could screen anyone whom we wished to punish.

Most of the European captives liberated.

Lieutenant Prideaux was met on his return to Magdála by Mr. Rassam, and the remainder of the British prisoners and several of those of other nations, all of whom arrived in my camp before evening.

My further conditions were not complied with. At the request of Dejach Alema I had promised to abstain from hostilities for 24 hours. After the lapse of 48 hours Theodore had not surrendered himself; reliable information reached me that his army was recovering from their defeat, that many soldiers who had been unable to return to Magdala on the night of the 10th had since rejoined their ranks, that fresh defensive arrangements were being made, and that Theodore and his Chiefs even contemplated a night attack on the Second Brigade encamped on the lower ground. I therefore prepared to attack the enemy's position.

I had originally intended first to assault Fahla from the side which fronted our camp, and was screened from the fire of Islamgie and Selassie. But under the altered condition of the enemy, Theodore, having by death, wounds, and desertion lost half of his army and his bravest Chiefs, I determined to attack Islamgie by the King's Road.

Position of troops previous to attack upon Magdala.

All arrangements for this had been considered, and the positions for the artillery reconnoitred and fixed upon, when information was brought to me that Theodore had left Magdala, and that many of the chiefs with their followers wished to surrender.

I agreed to accept their submission, and ordered Sir Charles Staveley to advance on Islamgie, relaxing no precautions that I had considered necessary for the attack.

The scarcity of water rendered it impossible to retain any considerable body of Cavalry before Magdala; my personal escort, under a Native officer, only remained, and with a few details of other corps, was sent under command of Lieutenant Scott, A.D.C., to watch the west side of Magdala, where they took up a good position, until the arrival of the Cavalry, under Colonel Graves,* who completed the investment up to the Kaffir Ber Gate, which was watched by the Gallas.

The Bashilo was held by the Head-Quarter detachment of the Sind Horse, under Major Briggs, and detachments of the 3rd Dragoon Guards, 3rd and 12th Cavalry, under Major Miller, to secure that point, and provide against the escape of the enemy in that direction by the Menjara Ravine.

A detachment of the Belóochees, under Lieutenant Beville, ascended by the spurs of Fahla, and occupied that important position, where they were reinforced from the Second Brigade by the Head-Quarters Wing of the 10th Native Infantry, under Colonel Field.

The artillery was placed in position, and the troops advanced, preceded by Captain Speedy, of the Intelligence Department, with a small escort of the 3rd Light Cavalry, under Lieutenant-Colonel Loch, to communicate with the Chiefs who wished to surrender, and to prevent any misunderstanding.

No resistance was offered.

Sir Charles Stavely effected an entrance to Islamgie and Selassie, through a difficult crevice in the rocky escarps.

It would be impossible to arrive at any correct estimate, either of the numbers of the armed men who laid down their weapons, or of the masses of people, men, women, and children, whom we found on Islamgie.

It was necessary to collect and guard the arms that were surrendered.

It was also necessary to send down all the disarmed soldiers and the miscellaneous multitude that followed them, to the plain below, before I could proceed actively against Magdala.

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* 3rd Dragoon Guards (173); Lieutenant-Colonel Tower; 3rd Bombay Cavalry (183), Captain Macnaghten; 12th Bengal Cavalry (96), Major Gough, V.C.

Theodore, himself, having abandoned his attempt to escape, was making preparations for defence, and offering us defiance in front of Magdala.

Attack of Magdala.

By three o'clock the Abyssinians having nearly all cleared away from Islamgie, I ordered the attack of Magdala to be at once carried out.

The entrance of Magdala is 300 feet above the terreplain of Islamgie, and the ascent is by an extremely steep and rugged path.

Viewing the very difficult nature of the approach, I made the attack as strong as possible, and massed the whole of my artillery* fire to cover it, in order to overpower the enemy's resistance and prevent the heavy casualties which I should otherwise have incurred.

The assaulting force consisted of the 2nd Brigade, led by the 33rd, Duke of Wellington's regiment, accompanied by detachments of the Royal Engineers and Madras and Bombay Sappers and Miners, with means of clearing away obstacles.

The First Brigade to be in close support.

I concentrated the fire of the artillery on the gateway and the north end of the fort, which were crowded with the houses of the soldiers, avoiding as much as possible the higher part of the interior, occupied by the Abyssinian prisoners and non-combatants.

The enemy carefully concealed themselves from view, so that the place seemed almost deserted, although, when entered by our troops, it was found to be thronged with soldiers who had thrown away their arms, released prisoners, and the numerous voluntary and involuntary followers of Theodore's fortunes.

The artificial defences consisted of stone walls, loop-holed and surmounted by strong and thick barricades of thorny stakes, with narrow stone gateways. The lower one built up in the interior, the higher one being 70 feet above the lower, and approached by a very steep narrow path winding amongst the soldiers' huts.

The attack was ably conducted by Sir Charles Staveley, whose report is annexed, and gallantly carried out by the troops. Fortunately the defences were very unscientifically constructed, and though the attack was met by a sharp fire from the enemy, yet they could not direct it on the head of the storming party without exposing themselves to the rapid and fatal fire of the Snider rifle, and our loss was, in consequence, very small.

The Royal Engineers and Sappers, and leading sections of the 33rd Regiment were long before they could force an entrance, and during that time nine officers and men of the Royal Engineers and Sappers received wounds or contusions.

At length an entrance was found by means of the ladders near the gate, and by the leading men of the 33rd, who scaled a rock and turned the defences of the gateway, the enemy was driven to the second barricade, and when that was carried all resistance ceased.

Amongst the dead near the outer gateway were found several of Theodore's most devoted Chiefs; one of them, Dejach Enjeda, had urged Theodore to massacre all the prisoners, a course from which he was dissuaded by others; close to the second gateway lay the body of Theodore.

Theodore's death.

At the moment when the barricade was forced by the 33rd, Theodore fell, as I have since learned, by his own hand, his troops immediately fled, some by the Kaffir Ber Gate, which was found choked with arms that had been cast away in their flight.

* 4 12-pounder Armstrong guns of the G Battery, 14th Brigade, under Captain Murray; 2 8-inch mortars, manned by detachment of 5 Battery, 25th Brigade, under Brevet-Major Hills, V.C.; 12 7-pounder steel mountain guns of the A and B Battery 21st Brigade, under Brevet Lieutenant-Colonel Penn and Captain Twiss; 4 rocket tubes attached to the Steel Battery; 12 rocket tubes, Naval Brigade, under Captain Fellowes.

Of these fugitives the greater part fell into the hands of the Gallas, and the remainder, seeing the fate of their comrades, and hearing the taunting invitations of the Gallas, returned to Magdāla and surrendered.

The command of Magdāla was entrusted to Brigadier-General Wilby, who held it with the 33rd and wing of the 45th Regiments. Magdala occupied by General Wilby.

So thickly was the fortress inhabited, and so great was the crowd of people, that it was no easy matter to establish order.

Guards were placed at the gates and such places as required protection.

The family of Theodore were committed to the care of Mr. Rassam, who was requested to do all that was in his power for their comfort and protection.

The Abyssinian prisoners were released from their chains, and the very numerous body of Abyssinians whose histories and condition it was impossible at the time to investigate, were collected in an open space in the centre of the fortress, where they could be protected, and where they quickly threw up small huts for themselves, and remained until their final departure. Release of Abyssinian prisoners.

On the 15th, the 4th King's Own Regiment relieved the 33rd in Magdāla, and the 45th were moved to Islamgie to reinforce the detachment of the 10th Native Infantry under Colonel Field, for the protection of the captured arms and ordnance, and to furnish working parties for their destruction.

The inhabitants of Magdāla were collected at Arogie, where great vigilance was necessary to protect them from the Gallas, who were lying in wait, both day and night, for opportunities of plundering and destroying them.

Notwithstanding the friendly relations with the Queens of the Gallas, their people were so little under restraint, that it was frequently necessary to fire upon them to drive them from molesting our water-parties and carrying off the mules. A party of them, in search of plunder, even dared to make their way into Magdāla, where they were captured by the guard of the 33rd Regiment.

On the 15th and 16th, the disarmed soldiers and people of Magdāla made their exodus from Arogie.

Every consideration was shown them, and they were allowed to take all their property.

The Arogie defile was guarded by infantry; and their procession, after crossing the Bashilo, was guarded by cavalry patrols until they reached Wadela.

No doubt many of these people deserved little mercy at the hands of the peasants of Talanta, who had suffered so much misery from Theodore's troops; but, having surrendered to the British force, it was incumbent on us to protect them until they reached a point of safety, from whence they could go to their native districts.

On the morning of the 17th orders were issued to clear every one out of Magdāla by 4 P.M. At that hour the whole of the captured ordnance having been destroyed, the gates of Magdāla were blown up and the whole of the buildings were committed to the flames.

The wounded Abyssinians who had no friends to take charge of them were conveyed into our hospitals.

The elephants and heavier ordnance having been sent in advance on the 15th, on the 18th of April the force re-crossed the Bashilo, on its return to the coast.

I have the honour to enclose plans and photographs to illustrate the course of the operations.

I regret that I have not been able to complete my despatch earlier, but owing to the marching in a difficult country, which has occupied the greater part of the days, and the many demands on my time, it has been quite out of my power.

By the next mails I hope to submit the conclusion of my despatch, which will include the re-embarkation of the greater part of the force, and I shall then have the satisfaction to represent for the favourable consideration of Her Majesty's Government the services of the officers and men of the force which I have had the honour to command, of which it is impossible for me to write in too high terms, and to which I could not now do adequate justice.

NOMINAL ROLL of Officers and Men Wounded at the Capture of Magdāla, on 13th April, 1868.

Camp, near Magdāla, 15th April, 1868.

Corps.	Regimental Number.	Rank and Name.	Character of the Wound.
Royal Engineers	..	Major Gordon Pritchard	Two slight wounds by splinters of stones in right shoulder, with considerable contusion.
"	5957	Lance Corporal E. Wm. Hobson ..	Slight splintered wound of right leg.
"	3470	Sapper H. T. Davis	Slight splintered wound of forehead.
H.M.'s 33rd Regiment	..	Serjeant Edward Jones	Gun-shot wound through right calf; severely.
" "	..	Private Stephen Lake	Gun-shot wound through right leg; severely.
" "	..	" T. Hayne	Spear wound over frontal bone; slight.
" "	..	" P. Daly	Gun-shot wound left hand; slight.
" "	..	" Hickson	Gun-shot wound of knee; slight.
3rd Light Cavalry	..	Sowar Ramjee Khan	Gun-shot wound right forearm; severely.
Madras Sappers and Miners ..	..	Havildar Koondua Swamee ..	Gun-shot wound left elbow joint; severely.

The following officers and non-commissioned officers were also hurt near the gateway, but were not returned as wounded:—

Captain Elliott, Madras Sappers.
Cornet Dalrymple, 19th Hussars, attached to Madras Sappers.
Serjeant Fielding, Madras Sappers.
Serjeant Dean, 10th Company Royal Engineers.
Lieutenant Morgan, 10th Company Royal Engineers.

NOMINAL ROLL of Men Wounded in the Action before Magdāla, on the 10th April, 1868.

Magdāla, 11th April, 1868.

Corps.	Regimental Number.	Rank and Names.	Character of the Wound.
H.M.'s 4th King's Own	..	Captain Edward Roberts ..	Dangerously; gun-shot wound of left elbow joint.
" "	672	Serjeant Musketry Instructor Michael Creedon.	Dangerously; gun-shot wound of left leg.
" "	338	Private George Kirby	Dangerously; gun-shot wound of left humerus.
" "	1096	Lance Corporal Richard Odwell ..	Severely; gun-shot wound of left foot.
" "	502	Private George Sinfield	Slightly; gun-shot wound of right hand.
" "	887	" Michael Unica	Slightly; gun shot wound of right hand.
" "	..	Lance Corporal Hugh Evans ..	Slightly; splinter wound of left eye.
23rd Punjab Native Infantry ..	375	Private Desa Sing	Dangerously; gun-shot wound of left femur.
Pioneer	..	" Basa Kali	Severely; spear wound of neck.
"	..	" Balt Sing	Severely; gun-shot wound of sacrum.
"	..	" Utter Sing	Dangerously; gun-shot wound of left femur.
"	..	" Jewal Sing	Severely; gun-shot wound of face.
"	879	Bugler Khosal Sing	Severely; gun-shot wound of right hand.
"	..	Private Jeeta Sing	Severely; gun-shot wound of right thigh.
"	1855	" Sunoop Sing	Slightly; contusion of abdomen from a bullet.
"	..	" Goozun Sing	Slightly; gun-shot wound of left foot.
"	..	" Hura Sing	Slightly; spear wound of hand.
"	..	" Jewan Sing	Slightly; spear wound of hand.
"	..	" Jawala Sing	Slightly; spear wound of thumb.
Bombay Sappers and Miners ..	..	C. H. Sumboo	Slightly; lost two teeth, upper lip divided by a musket bullet.

From Major-General Sir Charles Staveley, K.C.B., Commanding the 1st Division of the Abyssinian Expeditionary Force, to the Deputy Adjutant-General.

Attack of Magdala: Sir C. Staveley's Report.

Head-Quarters, Camp before Magdāla, 14th April, 1868.

HAVING been directed by His Excellency the Commander-in-Chief to report on the disposition made of the Division under my command for the attack of Magdāla on the 13th instant, a brief description of the place will first be necessary.

The defences consist of three very steep mountains, named Fahla, Selassie, and Magdāla, each being surrounded at the top by steep and precipitous scarps. Fahla and Magdāla are joined to Selassie by saddles, and are nearly at right angles to it. A tolerably good, but in some places very steep, road leads from the British camp up the north side of Fahla, over the saddle along the south of Selassie, and over the next saddle called Islamgie, into Magdāla. A pathway branches off this road at the Fahla saddle to the left, along the foot of the Selassie scarp for some distance, and then turns up a zigzag to the top, another pathway leads direct up to Selassie from the Fahla saddle. Neither of these paths were found practicable for mules, although we had been informed that they were. The summits of Fahla and Magdāla are flat, that of Selassie slopes upwards from the scarp to the centre, and commands the other two mountains.

On the morning of the 13th instant, at seven o'clock, a detail of 50 sabres of the 3rd Light Cavalry (Bombay) and 12th Bengal Cavalry, under Lieutenant-Colonel Loch, of the 3rd Light Cavalry, was sent up to the Fahla saddle, and placed at the disposal of Captain Speedy of the Intelligence Department, to communicate with those of the King's Troops who had surrendered.

On the advance being ordered at half-past eight A.M., according to instructions received from the Commander-in-Chief, the G. 14, R.A., under Captain Murray, and the two 8-inch mortars under Captain Hills, R.A., were placed under Colonel Wallace, R.H.A., in a position covering the troops with Selassie in front and Fahla on the right, the A. 21, Mountain Battery, under Lieutenant-Colonel Penn, having ascended a short distance with the column was placed in position on a spur to the left of the road to cover the head of the ascent, whilst the B 21, R.A., under Captain Twiss, followed next in rear of the leading battalion of infantry,

The 3rd Dragoon Guards, under Lieutenant-Colonel Tower, the 3rd Light Cavalry, under Captain Moore, and the 12th Bengal Cavalry, under Major Gough, V.C., the whole under the command of Colonel Graves, of the 3rd Bombay Light Cavalry, were sent round to the south, and below the mountain, to prevent the escape of the Magdala garrison in that direction.

The division moved up the road, the 2nd Brigade, with a ladder party of sappers, leading. A company of the Belooch Battalion was sent up the first accessible spur on the right into Fahla, and two companies of the 10th Regiment Native Infantry up the next spur.

On arriving at the Saddle the advanced guard of two companies of the 33rd Regiment were sent up the direct path to Selassie, and the remainder of the 2nd Brigade, and B. 21, R.A., by the pathway above described, to the left. The path up the zigzag was so bad that, although practicable for infantry, only three mountain guns could be passed up, and those by hand. The 1st Brigade moved along the high road to the south of Selassie, followed now by Captain Murray's battery, the two 8-inch mortars, and the Naval Rocket Brigade.

The 2nd Brigade crowned Selassie before the 1st Brigade had moved along its southern side. I mention this because Mr. Waldmaier, one of the released European prisoners, and my guide on the occasion, informed me afterwards, from information he had received, that King Theodore imagined we should advance by the high road along the south of Selassie, without first occupying Selassie, and had arranged accordingly to fall on our troops from the heights overlooking that part of the road; so far, for reasons which it is unnecessary for me to explain, no opposition was offered to our advance.

The 2nd Brigade having occupied Selassie, the King's troops were ordered to lay down their arms, and retire to the plain below; the first order was immediately carried out, and thousands of men, women, and children left the mountain so soon as the narrow exit permitted.

Some of the enemy, and amongst them the King, being observed on the Islamgie Saddle, below Selassie, a company of the 23rd Regiment, under Captain Campbell, was pushed down the slope to the Saddle, and the cavalry, under Lieutenant-Colonel Loch, advanced along the road; these parties were fired on by the enemy, but the fire being returned, and some of the King's guns being turned on him by order of Lieutenant-Colonel Loch, he soon retired into Magdala.

Dispositions for the assault.

I now received the orders of His Excellency the Commander-in-Chief to make the following dispositions for the assault of Magdala by the 2nd Brigade supported by the 1st.

The 33rd Regiment, ten companies strong, to advance across Islamgie, two companies skirmishing, and two in support, the remaining six companies, under Major Cooper, commanding the regiment, headed by a detachment of the Royal Engineers under Major Pritchard, and the K Company Madras Sappers and Miners under Captain Elliott, with powder bags, crow bars, and ladders, to form the storming party.

Two companies of Bombay Sappers and Miners, under Captain Leslie and Lieutenant Leacock, to follow in rear of 33rd Regiment.

On nearing the steep ascent to Magdala gate the skirmishers to halt, and be reinforced by the supports, and keep up a fire at the gate and defences during the ascent of the storming party.

The 45th Regiment, under the command of Lieutenant-Colonel Parish, to advance in line in rear of the 33rd Regiment, and the 1st Brigade in column some distance in rear in reserve, except the Punjaub Pioneers, left with two companies of the 10th Bombay Native Infantry to guard the camp.

Two companies of the 10th Native Infantry, under Colonel Field, to remain on Selassie to guard the arms, and clear the Abyssinians off the mountain.

The two mountain, and the Naval Rocket, Batteries, under Lieutenant-Colonel Milward, to be placed on the north end of Islamgie, to cover the advance, and keep up a fire at Magdala Gate.

The G. 14, R.A., and 2 8-inch mortars, under Lieutenant-Colonel Wallace, now arrived on elephants from below, to advance along the main road south of Selassie as far as practicable, and also cover the advance of the troops.

I leave it to His Excellency how far these dispositions were carried out.

There were two lines of defence, with a gate in each, at the head of the very steep and strong ascent of the point of attack; the first gate had a porch 15 feet deep, filled up as high as 12 feet with large stones. From this line of defence the enemy kept up a fire through the loop holes of a wall, topped with a strong fence, and a passage for the column could not be effected here until a ladder had been passed over a wall to the right of the gate.

In the meantime some men of the 33rd Regiment scrambled up a cliff to the right, and succeeding with much difficulty in surmounting the wall and fence, turned the enemy at the gate, and, with the head of the column, drove him to the second line of defence above; this being comparatively weak, no further resistance was offered.

On entering the second the body of King Theodore was found shot through the head by his own hand.

The only two gates by which the garrison might have moved out being watched, the one to the south by our cavalry, and the other to the east by the Gallas, the men lay down their arms, and begged for mercy; this was accorded, and not a man was injured.

I enclose a return of our wounded, all of whom were taken the night of the assault to the field hospital, 2nd Brigade, where they received every attention from Surgeon-Major Wyllie, the Medical Officer in charge.

I also enclose a return showing the number of rank and file of the corps who took part in the attack, and a return of the ordnance found on the three mountains and destroyed; also a photograph of the attack on Magdala, from a sketch by Major Baigrie, Assistant Quartermaster-General.

I wish to bring the names of the following officers to the notice of his Excellency:—Brigadier-General Wilby, who commanded the 2nd Brigade, and led it to the assault. He mentions the very effective service rendered him by Captain Hicks, his Brigade Major; Captain James, Deputy-Assistant Quartermaster-General; and Captain Capel, 12th Bengal Cavalry, A.D.C.

Major Pritchard, R.E. (who was wounded), the senior officer with the Royal Engineers and Sappers, and who mentions the able assistance he received from Captain Elliott, commanding K Company, Madras Sappers.

Captain Foord, Lieutenant Bird, Cornet Dalrymple, and Surgeon Pearl, of the

Madras Sappers; Serjeants Harrold and Dean, R.E., Corporal McDonagh, and Sapper Bailey.

Major Cooper, commanding 33rd Regiment, who led his regiment to and over the gate; and I beg here to bring especially to notice No. 3,691, Drummer Michael Magner, and No. 949, Private James Bergin, 33rd Regiment, the two men who first forced an entrance to the extreme right and turned the gate.

Captain Elliott, who commanded the Madras Sappers.

Captain McDonnell, Commanding Bombay Sappers; Lieutenant-Colonel Parish, Commanding 45th Regiment; Colonel Field, Commanding 10th Regiment Native Infantry; Brigadier-General Schneider, Commanding 1st Brigade; Lieutenant-Colonel Cameron, Commanding 4th King's Own Royal Regiment; Major Beville, Commanding Wing Belooch Regiment; Major Chamberlain, Commanding 23rd Punjab Pioneers; Brigadier-General Petrie, Commanding Royal Artillery; Lieutenant-Colonel Wallace, Commanding Division Royal Artillery; Lieutenant-Colonel Milward, Commanding Division Royal Artillery; Lieutenant-Colonel Penn, Commanding A. 21, Royal Artillery.

Commander Fellowes, Commanding Naval Rocket Batteries.

Captain Twiss, Commanding B. 21, Royal Artillery.

Colonel Graves, 3rd Brigade Light Cavalry, Commanding Cavalry Brigade; Lieutenant-Colonel Tower, Commanding 3rd Dragoon Guards; Major Gough, V.C., Commanding 12th Bengal Cavalry; Major Briggs, Commanding Scind Horse; Lieutenant-Colonel Loch, Commanding Details of Cavalry; Captain Moore, Commanding 3rd Brigade Light Cavalry; Lieutenant W. Scott, A.D.C., Commanding the Commander-in-Chief's Escort.

Lieutenant A. Le Messurier, Royal Engineers; Captain Leslie and Lieutenant Leacock, Bombay Sappers; Captain Bainbridge, Land Transport Corps, who had the very difficult duty of providing water for the troops throughout the operations since leaving the Bashilo River.

Captains Ross and Griffiths and Twentyman, 20th Hussars, Commanding Divisions Land Transport Corps; Major Mignon, Assistant Commissary-General, 1st Division, whose difficulties are well known to the Commander-in-Chief; Major Bardin, Assistant Commissary-General, 1st Brigade; and Major Goldsworthy, Brigade Major of Cavalry, acting as Assistant Commissary-General, 2nd Brigade; Dr. Mahaffy, Principal Medical Officer, 1st Division, whose arrangements for the field hospitals were all that could be desired.

Surgeon-Major Wyllie, in charge of the field hospitals, 2nd Brigade.

I desire also to bring to notice the officers of my Staff:—Lieutenant-Colonel Wood, Assistant Adjutant-General; Major Baigrie, Assistant Quartermaster-General; Lieutenant Saunders, 20th Hussars, Aide-de-Camp; and Captain George Arbuthnot, extra Aide-de-Camp.

These officers rendered me great assistance in carrying out the orders of his Excellency the Commander-in-Chief during the day, and have served with me since my first arrival at Zula with the first-arrived brigade.

RETURN of ORDNANCE captured by the Force in the Magdala Fortress on the 13th April, 1868.

Guns.

3 brass 56-pounders, smooth-bore.
1 brass 18-pounder, smooth-bore.
4 brass 6-pounders, smooth-bore, Turkish.
4 brass 6-pounders, smooth-bore.
2 brass 6-pounders, smooth-bore, English, cast at Cossipore.

1 brass 6-pounder, smooth-bore, French.
5 brass 24-pounders, howitzer, Native and French.
3 brass 12-pounders, howitzers.
1 brass 3-pounder, howitzer.
4 iron 1-pounder, howitzer.

Mortars.

1 brass 20-inch.
1 brass 13-inch.
2 brass 10-inch.
5 brass from 2¼ to 6-inch.

N.B.—The guns, howitzers, and mortars were all found serviceable, and supplied with ammunition, except one 56-pounder, which had burst on 10th instant.

NOMINAL ROLL of Officers and Men wounded at the Capture of Magdāla on the 13th April, 1868.

Camp, near Magdāla, 15th April, 1868.

Royal Artillery.

Major Gordon Pritchard, two slight wounds, caused by splinters of stone, on right shoulder, with considerable contusion.
Lance-Corporal William Hobson, No. 5,957, slight splinter wound of right leg.
Sapper Henry Davis, No. 3,470, slight splinter wound of forehead.

Her Majesty's 33rd Regiment.

Serjeant Evan Jones, gunshot wound through right calf; severely.
Private Stephen Lake, gunshot wound through right leg; severely.
Private J. Hayne, spear wound over frontal bone; slight.
Private J. Daly, gunshot wound, left hand; slight.
Private Hickson, gunshot wound of knee; slight.

3rd Light Cavalry.

Sowar Ramjee Khan, gunshot wound of right forearm; severely.

Madras Sappers and Miners.

Havildar Kousbin Swamee, gunshot wound, left elbow-joint; severely.

RETURN of Killed and Wounded at the Storming of Magdāla on the 13th April, 1868.

Camp, near Magdāla, 15th April, 1868.

Corps.	Officers wounded, slightly.	Non-Commissioned Officers and Men wounded,		Total.
		Slightly.	Severely.	
Her Majesty's 33rd Regiment ..	0	3	2	5
3rd Light Cavalry	0	0	1	1
Madras Sappers and Miners	0	0	1	1
10th Company R.E.	1	2	0	3
Total	..	..	..	10

No. 4.

From Lieutenant-General Sir R. Napier, G.C.B., G.C.S.I., to the Secretary of State for India.

Right Honourable Sir, *Camp Adabaga, 19th May,* 1868.

I HAVE the honour to enclose a statement of the arrangements for the embarkation at Zula of the several corps and batteries forming this Force.

ARRANGEMENTS for the Embarkation at Zula of the Abyssinian Expeditionary Force.

Camp Marawah, 1st May, 1868.*

Corps.	Officers and European Non-commissioned Rank and File.	Native Officers and Non-commissioned Rank and File.	Followers.	Horses.	Ponies and Mules.	Elephants.	Proposed Date of Embarkation.	Destination.	Remarks.
3rd Dragoon Guards	214	...	126	222	...		27th May, 1868	Suez ...	Horses and Followers to Bombay, and Volunteers.
3rd Bombay Light Cavalry ...	10	450	323	447	73		28th and 29th May, 1868	Bombay ...	
3rd Regiment Sind Horse ...	9	449	235	416	124		30th and 31st May, 1868	Kurrachee ...	With horses, mules, tattoos, and Followers complete.
10th Bengal Cavalry	10	445	306	449	130		1st and 2nd June, 1868	Bombay ...	
12th Bengal Cavalry	10	467	273	431	289		3rd and 4th June, 1868	Bombay ...	
G Battery 14th Brigade R.A. ...	122	12	112	122	...		26th May, 1868	Suez ...	Horses and Followers to Bombay, and Volunteers.
A ,, 21st ,, ...	99	...	99	11	113		27th May, 1868	Suez ...	Guns, mules, and Followers to Bombay.
B ,, 21st ,, ...	82	...	73	15	109		27th May, 1868	Suez ...	Ditto ditto.
5th ,, 23rd ,, ...	138	...	270	19	251		15th May, 1868	Bombay ...	To embark with guns, mules, and Followers complete.
1st Company Bombay Native Artillery ...	4	152	43	3	49		15th May, 1868	Bombay ...	... ...
10th Company Royal Engineers	86	...	25	...	25		30th May, 1868	Suez ...	... ...
G, H, and K Companies Madras Sappers.	27	348	122	9	1		As soon as all stores are shipped .	Madras ...	By steamer direct to Madras.
1st, 2nd, 3rd, and 4th Companies Bombay Sappers.	21	449	70	2	...		Ditto	Bombay ...	One Company for Aden.
4th R. O. Regiment	722	...	121	4	...		27th May, 1868	Suez ...	Volunteers and Followers to Bombay
26th Cameronians	851	...	173	21	...		29th May, 1868	Bombay ...	With Followers complete.
33rd Regiment	810	...	143	8	...		30th May, 1868	Suez ...	Volunteers and Followers to Bombay.
45th ,, ...	791	...	98	13	...		1st June, 1868	Bombay ...	With Followers complete.
2nd Regiment Bombay N.I. ...	6	687	99	7	...		10th May, 1868	Bombay ...	Ditto.
3rd ,, ,, ...	11	679	46	10	...		As soon as all stores are shipped.	Bombay ...	Ditto.
10th ,, ,, ...	9	663	91	11	...		10th and 28th May, 1868	Bombay ...	Ditto.
18th ,, ,, ...	9	686	45	9	...		10th May, 1868	Bombay ...	Ditto.
21st ,, Punjab N.I. ...	7	782	219	7	264		15th May, 1868	Bombay ...	With mules and Followers complete.
1st Company 21st Bombay N.I.	1	65	11	...	...		10th May, 1868	Bombay ...	With Followers complete. To embark with wing 10th N.I.
23rd Regiment Punjab N.I. ...	10	727	216	10	359		31st May, 1868	Bombay ...	Do. and mules complete.
25th ,, Bombay N.I. ...	8	584	89	11	...		As soon as all stores are shipped .	Bombay ...	With Followers complete.
27th ,, ,, (Belochees)	9	713	68	10	...		26th May, 1868	Kurrachee.	Ditto.
Bengal Cookie Corps	7	...	1,423	...	...		As soon as all stores are shipped .	Bombay ...	Ditto.
Bombay Army Works Corps ...	9	...	868	4	...		Ditto	Bombay ...	Ditto.

40 Elephants to embark for Bombay in separate Ships.

T. J. HOLLAND, *Captain,*
Assistant Quartermaster-General.
In charge of Quartermaster-General's Department at Head-Quarters.

* *See* Chapter XXI, page 107.

Notes for Embarkation Orders.

FINAL Survey Boards should assemble on each ship, as in Bombay, prior to embarkation. The proceedings should be made out in duplicate, one copy being sent to this office for record, and the other given to the Officer Commanding the troops on board, for delivery at the port of debarkation. These Survey Boards should assemble, as a rule, three days before the date named for the embarkation.

The Naval Brigade will rejoin Her Majesty's steam frigates "Octavia" and "Satellite," under orders which will be hereafter issued.

Special instructions regarding the embarkation of Land Transport animals will be sent hereafter. Arrangements should, however, be made to prepare and provision ships for all the effective mules, all the elephants, and 500 of the best camels.

Application has been made for the services of the Indian troop-ships "Malabar," "Jumna," and "Enphrates," for the transport of troops from Zula, and for the troop ships "Crocodile" and "Serapis" from Alexandria to Portsmouth.

T. J. HOLLAND, *Captain*,
Assistant Quartermaster-General.

No. 5.

Lieutenant-General Sir. R. Napier to the Military Secretary, India Office.

Sir, *Camp Senafé, 27th May*, 1868.

As the troops which have composed the Abyssinian Expeditionary Force will, I trust, all have embarked by the 3rd of June, with the exception of the Madras and Bombay Sappers, the 3rd and 25th Regiments Bombay Native Infantry, the Bengal Coolies, and Bombay Works Corps, which I purpose to leave on the coast for a few days to protect the stores, which it is hoped will have been shipped before the 15th of June, I have the honour to solicit the orders of the Right Honourable the Secretary of State for India in regard to the disposal of the departmental records. As these relate to and may contain matter which affects the interests of the British as well as the Indian Armies of the three Presidencies, the Secretary of State may perhaps consider the India Office the most suitable place for depositing them.

No. 6.

Lieutenant-General Sir R. Napier, G.C.B.. G.C.S.I., to the Secretary of State for India.

Commander-in-Chief's Office, Camp, Kumayli,
Right Honourable Sir, *June* 1, 1868.

IN continuation of my despatch, No. 40, dated 12th May, I have the honour to report that I this day passed the Suru Defile with the last column of the Abyssinian Expeditionary Force, the 25th Bombay Native Light Infantry and the 27th Belooch Battalion.

The march from Talanta to Antalo was trying, from the frequent severe storms of rain which appeared to accompany us, and from which our troops, in some degree, and more especially the followers and transport animals, could not fail to suffer. March from Talanta to Antalo.

The wild border tribes of Abyssinians and Gallas, through whom our route lay from the Takazze to Antalo, being very little under the control of their distant and almost nominal rulers, and were perfectly well-behaved on our advance, finding by degrees our vulnerable points, had been for some time making attacks upon our muleteers and camp followers when venturing far from their escorts, and on some occasons even on our armed soldiers.

Attacks of Gallas.

In the first instances, some camp followers were killed, and in the last, our soldiers being driven to use their weapons, several Abyssinians and Gallas were killed and wounded.

Considerable numbers of armed men, principally Gallas, watched our march from the hills, and though restrained by the pressure of our columns, they made attempts on our line of baggage, but met with little success; soldiers were freely interspersed along the line, and the rear-guard from Marowa to Antalo was continuously under the command of an experienced officer, Lieutenant-Colonel Bray, of the 4th (King's Own) Regiment, until we reached the coast.

This was a very clear indication of what a force returning in difficulties would experience.

In the friendly territory of Prince Kassai, the troops returned to marches made easy by the improved roads and the increased supplies of articles of food, turned into great luxuries by a period of privation, which were stored in the fortified posts of Antalo and Adigrat.

Floods in Suru Defile.

All local information led me to believe that there would be no danger of floods before the middle of June, but owing to the extraordinary severity of the spring rains, a succession of floods during the early part of May did much damage to the Suru Defile road.

On the 19th of May, with hardly any warning, a heavy flood, coming from a lateral tributary which enters above Suru, filled the Suru Defile channel so suddenly that seven camp followers and some cattle, not being instantly removed from the waterway, were swept away and perished.

On the 30th of January, full precautionary instructions were issued to secure the safety of the troops in the pass, and I had no apprehension on their account. The losses of the 19th arose from avoidable causes, and were not likely to recur.

In case we might be detained during the rainy season, an alternative line, turning the Suru Defile, had been surveyed by Lieutenant De Thoren, 45th Regiment, Quarter-master-General's Department, by which a safer though less even path might have been opened.

By the exertions of the garrison of Suru, directed by Captain Chrystie, Royal Engineers, the damage to the road in the pass was rapidly repaired after each flood.

Sanitary state of the Force.

The severe weather in the high mountains, with the reaction after excitement and the scanty food, naturally increased the sick lists, but there are few bad cases.

The wounded are rapidly recovering; and although the total number of sick ultimately amounted to 260, no member of the Force, however humble, has failed to obtain transport when required.

The whole Force have returned in safety to the coast, and the greater part have already re-embarked.

It is now my duty to lay before Her Majesty's Government a statement of the services of the troops under my command, and of the General, Departmental, and Personal Staff.

Statement of services of troops.

Those who first claim notice are the Pioneer Force, who landed at Zula in October

last, and consisted of Major Marett's Mountain Battery (Native); the 3rd and 4th companies of Bombay Sappers and Miners, under Captains Leslie and Leacock; the 3rd Bombay Light Cavalry, commanded by Colonel Graves; and the 10th Native Infantry, under Colonel Field, who commanded the whole. Pioneer force.

Their labours were not commenced under very encouraging circumstances. A barren shore so shelving that the troops had to wade several hundred yards daily in landing stores, a supply of water so scanty that it disappeared immediately, and a temperature so sultry that any exertion was oppressive; but the spirit of the troops never flagged. Encamping grounds were cleared, 20 miles of road were made from the coast to Kumayli and towards Suru, a depôt was established at Senafè, and huts erected for the muleteers.

Lieutenant Beck's Company of the Bombay Marine Battalion was the first party of Infantry in Abyssinia, amongst the earliest labourers in the Suru Defile, and throughout the campaign performed most valuable service as Pioneers, in sinking wells and opening and maintaining the road to Senafè. Bombay Marine Battalion.

The left wing of the 10th garrisoned Senafè, and had a large share in the works which made the depôt a model of neatness and of convenience in its water supply. 10th Regiment.

The right wing of the 10th formed part of the advanced Pioneer column, and shared in all its labours. After five months of work, it had an unwilling rest at Antalo, and was soon again in the front, and at the capture of Magdàla.

The next arrivals in the country were Murray's Armstrong Battery, the 33rd Regiment, under Colonel Dunn, V.C., and Beville's Belooch Battalion.

Captain Murray, during a long detention of his battery at Kumayli, sought occupation for his men in every way that could aid our progress. It mattered little whether they cleared the obstructions in seven miles of road, carried water for six miles to support a working party, moved stores for the Commissariat, broke in mules to harness, or fitted them with pack-saddles; everything was done with the same ability and zeal that has carried the battery over 800 miles of mountains in efficient condition. Murray's Battery.

The 33rd Regiment furnished a detachment of two companies to Kumayli for sinking wells. They were the first British Infantry in Abyssinia; they furnished heavy fatigue parties for all the works at Zula. In the absence of a sufficient number of the Land Transport Corps, the men converted themselves into extemporary muleteers, and re-caught and saved large numbers of mules which would otherwise have perished. They then proceeded to Senafè. 33rd Regiment.

The Belooch Regiment went to Kumayli, where Major Beville, with the right wing, joined Sturt's Bombay Sappers in making the admirable road in the Suru Defile. Major Hogg, with the left wing, made the scarcely less difficult one at Rahagedi. The Beloochees then garrisoned Adigràt, and raised much of the intrenchments there. The right wing partook of all the labours of the advance, and was present at Arogie and Magdàla. The left wing, long delayed for carriage, at length pressed to the front, and, by hard marching, was present at Magdàla on the 13th April. Belooch Regiment.

The 10th Company Royal Engineers, under Major Pritchard, composed of a body of highly-instructed and valuable soldiers, arrived from England, and was amongst the first to land at Zula. 10th Company Royal Engineers.

The well-sinkers, directed by Lieutenant Le Messurier, the signallers under Lieutenant Morgan, and the telegraphers and photographers, have rendered excellent service throughout the campaign. The head-quarters of the 10th Company has always accompanied the leading column in the advance.

4th King's Own, 3rd, and 25th Bombay Native Infantry.

The 4th King's Own Regiment, commanded by Lieutenant-Colonel Cameron, with the 3rd and 25th Bombay Native Infantry, under Lieutenant-Colonels Campbell and Little, on arrival at Zula, were immediately put to work upon the railway, on landing water and stores for the Force, and on the embankments to protect the Commissariat stores, which were liable to be inundated at spring tides. All these were heavy labours which left no soldier unemployed.

Nothing could exceed the spirit with which these regiments worked in order to hasten the advance. The work on the foreshore fell chiefly on the Native troops. Little could the mud-bespattered labourer with his basket be recognised as the smart Sepoy of the parade-ground.

Punjab Pioneers.

Major Chamberlain's Pioneers, on arrival, at once took their place on the works; they brought the energy and the spirit of their race, together with their organization for skilled labour, to bear on every duty, and the works received an increased impetus.

At 50 feet below the surface they found sweet water, an inestimable blessing to the Ishmaelites of Zula, who in their gratitude were ready to worship the Punjabees. There is no part of the way which does not bear marks of the labour of this regiment, either on the roads or the telegraph.

33rd Regiment.

The 33rd Regiment was never idle; at Senafè and Antalo every man was employed, not only in making the roads and entrenchments, but in cutting and bringing in grass and wood for the Commissariat, and poles for the telegraph. When joined by the 4th King's Own Regiment they bore the first brunt of opening the way through the rocky mountains of Lasta to Magdàla.

A and B Batteries 21st Brig. Royal Artillery.

The A and B Batteries, 21st Brigade, Royal Artillery, under Lieutenant-Colonel Penn and Captain Twiss, took over the steel mountain guns on landing; they broke in mules, fitted their harness, and made extraordinary progress in the organization of these batteries, which maintained their thorough efficiency during the march to Magdàla and back.

Whilst waiting for the time when they could advance, and when the provisioning of Senafè was of the first importance, these batteries carried up several convoys of stores and provisions to that post.

5th Battery 25th Brig. Royal Artillery.

The 5th Battery, 25th Brigade, Royal Artillery (brass rifled mountain guns), under Major Bogle, arrived from Calcutta, complete and efficient in every particular of equipment.

The circumstances of the campaign did not permit this battery to join the advance troops; but while waiting at Zula, before they advanced to Senafè, Major Bogle volunteered the services of his battery for every useful work. In carrying treasure and stores to Senafè, the battery marched nearly 1,000 miles. It furnished a detachment, under Major Hills, V.C., which manned two 8-inch mortars, a valuable battery on elephants, which was carried to Magdàla and employed in the attack on that fortress. In case of a protracted defence, these mortars would have been invaluable.

Elephants.

Elephants have frequently been employed for the transport of artillery in Indian warfare, but it has been generally by means of draught; when guns have been carried, it has only been for short distances.

It has been the privilege of this campaign to prove that elephants could carry Armstrong 12-pounder guns and 8-inch mortars over steep mountains for many hundreds of miles.

There were 42 elephants employed in the conveyance of ordnance and ammunition, and of these five have been lost from hard work and want of water during the operations before Magdàla.

Royal Naval Rocket Brigade.

The Royal Naval Rocket Brigade, under Commander Fellowes, furnished chiefly by Her Majesty's ship "Octavia," broke in their own mules, quickly learned duties and a drill which were new to them, carried stores and provisions to Senafè, marched well, and were with the leading brigade in the advance on Magdàla. They have added to the high reputation which the Royal Navy have ever held when serving with the Army in the field.

45th Regiment.

The 45th Regiment, commanded by Lieutenant-Colonel Parish, arrived at Zula early in February, and remained there employed on the railway and other works until the 19th of March, when at length the obstacles to their advance being overcome, the headquarters and six companies making most strenuous efforts to reach the front, arrived at Talanta in time to share in the operations against Magdàla, after having marched 300 miles in 24 days, accomplishing the last 70 miles across the Wandach Pass, 10,500 feet high, and the Takazze and Jedda Ravines in four days—a rate of marching in such a country hardly to be surpassed. Four companies being urgently required were detained at Kumayli until late in March, when they were sent to garrison Adigrat and Antalo.

In addition to the severe mountain marches, in which each soldier carried a heavy load, regiments often worked at the roads on the line of march, or immediately on arrival in camp. Not unfrequently every available man of a regiment has been on working parties or outlying picket.

The constant storms of rain and the cold nights of the high altitude were encountered cheerfully, on rations reduced to 8 ounces of flour and meat only. An increase was made to the allowance of meat it is true, but that increase gave no compensation for the articles of rum, sugar, and compressed vegetables which had to be left behind.

2nd Bombay Grenadiers and 18th Bombay Native Infantry.

The 2nd Bombay Grenadiers and 18th Bombay Native Infantry, commanded by Lieutenant-Colonels Muter and Combe, and the 21st Bengal Native Infantry (Punjabees), by Major Thelwall, C.B., while longing for an order to advance, contributed most cheerfully their labours for many weeks to the railway, the roads through the pass, the wells, the water supply, and the conservancy of the pass.

26th Cameronians.

Of the regiments of the 4th Brigade, which had been held in readiness in Bombay, the 26th Cameronians, under Lieutenant-Colonel Henning, alone landed, and were moved as quickly as possible to Senafè; but short as was the detention of this regiment at Zula, it also contributed its labours to forward the work at our base.

5th and 8th Bombay Native Infantry.

The 5th and 8th Regiments Bombay Native Infantry, commanded by Lieutenant-Colonels Taylor and Sandwith, both regiments with a high reputation, returned to India on the fall of Magdàla without having landed in Abyssinia.

These three regiments were all wanted earlier, but were not sent for, because they could not have been moved to the highlands for want of food and transport.

Seamen and Marines.

Before the arrival of the Cameronians, when the connecting posts of our line had been numerically much weaker than I desired, I had obtained the services of 200 seamen and marines, under Captain Colin Campbell, from Her Majesty's ship "Octavia." They marched towards Senafè, but the arrival of the Cameronians rendered their proceeding onwards no longer necessary.

Cavalry.

The Cavalry service has been such as to call for the fullest powers of that arm as Light Cavalry.

The long line of communication required that the Cavalry should be in many detachments.

They have had peculiar responsibility thrown upon their officers and soldiers. Left in isolated positions, far from control, intrusted with Commissariat duties, while charged

to be conciliatory to the people of the country, they have been firm in maintaining inviolate the respect due to their position as soldiers. The supplies for the troops marching to join the main force in advance frequently depended on the ability and trustworthiness of a non-commissioned officer of Cavalry, and I have had repeated testimony to the efficiency with which these duties have been performed.

Seldom or never have Cavalry had such a variety of duties in maintaining communications for so many miles, climbing over mountains and through forest ranges, often benighted, where a false step would be destruction, and in danger of treacherous attacks from the wild border tribes, who are honoured amongst themselves for slaying without reason and without scruple.

The wear and tear of horses in such duties have been very considerable. The men, however, have returned to their more regular duties with a discipline and efficiency unimpaired.

3rd Dragoon Guards. The wing of the 3rd Dragoon Guards was long detained in India, and arrived late in the campaign.

Notwithstanding the distance and the severity of the country through which they marched, Colonel Tower, by judicious management, brought both men and horses in the most efficient condition in time to share in the investment of Magdāla.

3rd Bombay Cavalry and 3rd Sind Horse. The 3rd Bombay Cavalry and the 3rd Regiment Sind Horse, commanded by Major Briggs, having been the earliest in the field, have borne the hardest share of the duties, serving in their turn as parts of the Pioneer Force.

The rough training of the Sind Frontier Brigade, ever on outpost duty, rendered Major Briggs' regiment admirably qualified for the duties which it was called upon to perform in Abyssinia.

The 12th & 10th Bengal Cavalry. The 12th and 10th Bengal Cavalry, under Majors Gough, V.C., and Palliser, took up, on the 18th of March and the 1st of April, the chain of posts between Antalo and the Takazze; and Major Gough brought up the head-quarter detachment of the 12th, reduced to 96 men, to share in the attack on Magdāla.

Major Palliser, with the head-quarters of the 10th Cavalry, arrived at Attala in most opportune time to preserve our communications, which were very seriously assailed. Had the service been of longer duration, the regiments of Bengal Cavalry would have added to the high opinions which their soldierlike performance of their duties and efficient equipment have called forth.

Royal Engineers. The Royal Engineers, directed by Lieutenant-Colonel St. Clair Wilkins, have rendered invaluable services during this Expedition which has given such an ample field for their employment.

Their energy and skill are shown in every work, from the first landing in Zula to Magdāla, and require a special separate report.

The works of the Madras and Bombay Sappers and Miners, under Major Prendergast, V.C., Royal Engineers, and Captain MacDonnell, Royal Engineers, have been singularly valuable and important, and will be described in the report of the Engineer operations.

Commissariat Department. The very great services of the Commissariat Department, directed by Lieutenant-Colonel Lucas, and of the Transport Corps, directed by Lieutenant-Colonel Warden, both under the control of Lieutenant-Colonel Holland, of the Commissariat Department, have been rendered under many disadvantages, and require a separate report to do full justice to the officers and subordinates of their establishments.

Medical Department. The duties of the Medical Department, under the chief direction of Dr. Currie C.B., Inspector-General, have been efficiently and satisfactorily performed.

The necessities of the campaign demanded that the equipment of the Medical, equally with those of every other department with the advanced troops, should be reduced to the lowest possible scale, but with the very limited means at their disposal, Dr. Currie and the Deputy Inspectors-General, Dr. Pelley and Dr. Mahaffy, together with the Regimental and Staff Officers serving under them, performed their duties in a manner which has reflected great credit on that department of the Army.

Veterinary Department.

The services of the Veterinary Department, under Staff Veterinary-Surgeon Hallen, an able and valuable officer, have been of the highest importance.

A copy of Mr. Hallen's report on the working of this department is attached; Mr. Hallen makes special mention of the services of First-Class Veterinary Surgeons Lamb and Anderson.

Telegraph Service.

The telegraph, directed by the intelligence and experience of Captain St. John, Royal Engineers, and by Lieutenant Puzey, Royal Engineers, was carried to Antalo under circumstances of great difficulty, and although the wire was often mischievously cut, and communication interrupted, it was immediately restored. Errors were most rare. The telegraph worked well, and rendered important service.

Trigonometrical Survey.

The officers of the Trigonometrical Survey, Lieutenants Carter, Director, and Dummler and Holdich, Royal Engineers, Assistants, by the *most strenuous* exertions, and at the cost of great fatigue and privations, succeeded in surveying nearly 6,000 square miles, and carried their work from the coast to Magdala.

The labour of these officers, two of whom have been obliged to return to England from loss of health, will prove very valuable.

Sir Charles Staveley.

I am greatly indebted to Major-General Sir C. Staveley, K.C.B., who has afforded me the most valuable support and assistance throughout the campaign. He laid the first foundation of order at Zula, and when summoned to the front, ably commanded the First Division during the advance, in the action of Arogie, and at the capture of Magdala. As second in command he has possessed my fullest confidence.

General Malcolm.

Major-General Malcolm, C.B., commanded the Second Division, which held the line of country from Senafe to Antalo, and subequently to Lake Ashangi.

It required great temper and judgment to maintain the good understanding which I had established with the Chiefs and people of the country.

General Malcolm did this, and by his vigilance and activity kept the communications in Tigré in good order, and restored order in the district of Ashangi.

General Russell.

His Excellency Sir Seymour Fitzgerald was so good as to grant my request for the services of Major-General Russell, who left his important office, military and political, as Resident of Aden, to command at Zula.

In the administration of that post, General Russell has entirely fulfilled my expectations and wishes.

I am greatly indebted to him for the excellent manner in which he has conducted the very important and trying duties of his command.

General Collings.

Brigadier-General Collings, an officer of mature judgment and experience, conducted to my satisfaction the command at Antalo, a position of vital importance, both as affording support to the front and as the last point of connection with the friendly province of Tigré, the supplies of which were so valuable.

General Stewart.

Brigadier-General Stewart commanded at Zula for some time, and on Major-General Russell's arrival, proceeded to Senafe; in both commands Brigadier-General Stewart met with my approbation.

General Wilby.

Brigadier-General Wilby was usefully employed in the Kumayli Pass, in the earlier

stages of the Expedition, when the difficulty of arranging the transport of supplies to Senafé was greatest.

In the attack on Magdála, General Wilby commanded the 2nd Brigade of the 1st Division which assaulted that formidable position.

General Schneider. Brigadier-General Schneider commanded the 1st Brigade of the 1st Division which led during the advance on Magdála, was engaged at Arogie, and in the assault on Magdála.

Both of these officers have met with my approbation in the exercise of their respective commands, and have been very favourably recommended to my notice by Major-General Sir Charles Staveley.

General Petrie. Brigadier-General Petrie, commanding Royal Artillery, has afforded me every assistance. He was constantly present with the advanced troops, and directed the whole of the artillery at Magdála.

General Petrie mentions most favourably his Divisional Commanders, Lieutenant-Colonels Wallace and Milward, whose reports on their respective commands will be forwarded.

Colonel Wallace. It was due very much to the care and judgment of Colonel Wallace that the elephants with the heavy batteries accomplished their unequalled march with so much success.

Colonel Milward. Lieutenant-Colonel Milward, whose merits I had learnt to appreciate in China, was permitted by His Royal Highness the Field-Marshal Commanding-in-Chief to join me for the special purpose of directing the steel mountain batteries. The success of these weapons has been fully established, and the rapidity and completeness with which they were organized is due to Colonel Milward's experienced direction.

Other Artillery Officers. General Petrie also mentions the commanders of batteries, Lieutenant-Colonel Penn, Captains Twiss and Murray, and Brevet-Major Hills, V.C., Majors Marett and Bogle, and particularly his Brigade-Major, Captain Geary, and his Aide-de-Camp, Lieutenant Chapman, of the Royal Artillery.

Colonel Graves. Colonel Graves, 3rd Cavalry, very efficiently commanded the whole of the Cavalry on several occasions, including the operations before Magdála.

The 3rd Bombay Light Cavalry, very soon after its arrival in Abyssinia with the Pioneer Brigade, lost nearly one-half of its horses from the epidemic.

Immediate steps were taken to remount the regiment from Egypt and Bombay.

When the Force advanced from Antalo, Colonel Graves's regiment was remounted, and, by the great care bestowed on the horses, their condition was preserved in a remarkable manner.

Colonel Graves deserves much credit for the efficiency which his regiment has maintained under these trying circumstances.

Colonel Wilkins, Royal Engineers. Lieutenant-Colonel St. Clair Wilkins, commanding Royal Engineers, arrived in Abyssinia with the reconnoitring party. His report of the operations conducted by the officers of the Royal Engineers will show how unremitting have been his labours, and how extremely valuable have been his services and those of the department under his orders.

Captain Goodfellow. Captain Goodfellow, next in seniority, whose services at Zula in constructing the pier have already been noticed, was the Chief Engineer on the Highlands, and displayed great intelligence and activity in every duty throughout the operations.

Officers commanding Corps. I desire to express my very high appreciation of the services of the officers commanding the several corps of the Expeditionary Force, and of the officers, non-commissioned officers, and soldiers who have served under them during the campaign.

Lieutenant-Colonel Tower, commanding Wing 3rd Dragoon Guards, and Major Miller, who brought the wing from India in admirable order.

Major Briggs, commanding 3rd Regiment Sind Horse, and Majors Palliser and Gough, V.C., commanding 10th and 12th Regiments Bengal Cavalry; Lieut.-Colonel Loch, 3rd Light Cavalry; Lieutenant-Colonel Wallace, commanding Heavy Artillery; Lieutenant-Colonel Milward, Mountain Rifled Batteries; Captain Murray, commanding G Battery, 14th Brigade Royal Artillery, Lieutenant-Colonel Penn, commanding A Battery, 21st Brigade Royal Artillery; Captain Twiss, commanding B Battery 21st Brigade, Royal Artillery; Major Bogle, 5th Company 25th Brigade, Royal Artillery; Major Marett, Native Mountain Train; Major Hills, Elephant Mortar Battery; Commander Fellows, commanding Naval Rocket Brigade; Major Pritchard, commanding 10th Company Royal Engineers; Major Prendergast, V.C., Royal Engineers, Madras Sappers and Miners: Captain MacDonnell, Royal Engineers, Bombay Sappers and Miners.

Lieutenant-Colonel Cameron has won my admiration by the manner in which he has commanded his excellent regiment (the 4th King's Own), and the solderlike spirit which, by his teaching and example, he has so well fostered and maintained.

Colonel Field, Major Chamberlain, and Major Beville, commanding those admirable Native Regiments, the 10th Bombay Native Infantry, the 23rd Pioneers, and the 27th Beloochees; Lieutenant Beck, commanding detachment Marine Battalion; Major Pierce, 10th Native Infantry.

Major Cooper, commanding 33rd Regiment (the Duke of Wellington's), which led the assault on Magdāla.

Major Cooper was amongst the first who scaled the defences near the gateway,

Drummer McGuire and Private Bergin, of the 33rd, were the first who led the way through the stockade to the right, by which the defences of the gate were turned.

Lieutenant-Colonel Campbell, 3rd Bombay Native Infantry; Lieutenant-Colonel Parish, 45th Regiment (Sherwood Foresters); Lieutenant-Colonel Bray, 4th (King's Own) Regiment; Major Thelwall, C.B., 21st Punjab Infantry; Colonel Little, 25th Bombay Native Light Infantry; Lieutenant-Colonel Muter, 2nd Bombay Native Infantry. (Grenadiers); Lieutenant-Colonel Henning, 26th Cameronians; Lieutenant-Colonel Combe, 18th Bombay Native Infantry.

I am much indebted to Lieutenant-Colonel Holland, Controller of Supply and Transports, for the able and judicious manner in which he performed his very responsible duties, and which imperatively detained him at Zula; and deprived me of the benefit of his presence at my head-quarters. Lieutenant-Colonel Holland.

Also to Lieutenant-Colonel Lucas, Deputy Commissary-General, one of the ablest officers of the department, on whom devolved the whole executive burthen (a burthen which no less efficient and experienced officer could have sustained) of maintaining the supplies at the main base of operations. Lieutenant-Colonel Lucas.

Major Mignon, the senior Commissariat Officer on the Highlands, who had the important task of organizing the depôt during the advance, and Lieutenant Shewell, who were always with the advanced columns, and constantly under my notice. These officers were the pioneers of the Commissariat Department, and I am greatly indebted to them for their most valuable exertions. Major Mignon.

Lieutenant-Colonel Warden had a most arduous task in the organization of the Transport Corps. Lieutenant-Colonel Warden, Transport Train.

His divisions were thrown into work even before their establishment or organization were complete. Notwithstanding the misfortunes which beset the corps in its formation,

the final result has been most creditable to Lieutenant-Colonel Warden, his second in command Major Nuttall, and the many excellent officers of all branches of the Service whose energy and unremitting exertions have overcome every difficulty.

Lieutenant-Colonel Warden, his officers, and the subordinates of the Transport Corps, I desire to express my deep obligation.

Medical Officers.

My acknowledgments are due to Dr. Currie, C.B., for his able direction of the Medical Department, to Dr. Pelly, Deputy Inspector-General, who superintended at Zula, and under whose immediate charge were the Native troops and followers of the Expedition.

To Dr. Mahaffy, Deputy Inspector-General with the First Division, and also Deputy Surgeon-Major Guy, Surgeons Madden and Wyllie, and Assistant-Surgeon Martin, whose services have been most favourably brought to notice.

Veterinary Surgeons.

I desire to express my appreciation of the very great services of Staff Veterinary-Surgeon Hallen, First-Class Veterinary-Surgeon Lamb, Veterinary-Surgeon Anderson, and the officers of that department; also to Captain Swanson, Royal Artillery, Commissioner of Ordnance; and to Lieutenant-Colonel Bartlett, Treasurer to the Force.

Officers of reconnoitring party.

The officers forming the reconnoitring party, consisting of Brigadier-General Merewether, C.B; Colonel Phayre, Quartermaster-General, Bombay Army; Lieutenant-Colonel Wilkins, Royal Engineers; Major Baigrie, Assistant Quartermaster-General; Surgeon Lumsdaine, Captain Pottinger, Royal Artillery, Deputy-Assistant Quartermaster-General; Assistant Surgeon Martin, who landed at Zula in October last, deserve much credit for their valuable service in selecting the Kumayli Defile as the entrance to Abyssinia, a decision arrived at after much labour and research, and fully justified by a further acquaintance with the country.

General Merewether.

Brigadier-General Merewether has afforded very valuable service in political duties, in arranging with the various Chiefs at Zula and on the Highlands for the transport of supplies, and has ever been most zealous at all times and seasons to promote the success of the Expedition.

Her Majesty's Government are well aware of Brigadier-General Merewether's increasing exertions in favour of the captives since their first imprisonment.

Brigadier-General Merewether reports very favourably of the assistance he received from Lieutenant Mockler, Assistant Resident, Aden, who remained in charge of the relations with the Chiefs of Zula, and of the services of his Aide-de-Camp, Lieutenant Lockhart, of the Bengal Cavalry.

Colonel Thesiger.

Colonel the Honourable F. Thesiger, Deputy Adjutant-General, left England at two day's notice to join the Force in Abyssinia; his thorough knowledge of his duties, combined with great ability and untiring energy, render him a most valuable Staff Officer.

Colonel Thesiger had the duty of keeping me daily, nay hourly, informed of the state of the supplies at every post from Zula to Head-Quarters, and in this and other duties has rendered me most important services during the campaign.

Lieuten at-Colonel Macleod.

Lieutenant-Colonel Macleod, Assistant Adjutant-General, an officer of much experience, and thoroughly acquainted with the Native army, has ably supported the Head of his department, and has performed his duties greatly to my satisfaction.

Colonel Phayre.

I am greatly indebted to Colonel Phayre, Deputy Quartermaster-General, who has rendered most important services in the early examination of the country, the direction of the Pioneer Force to Antalo, and the subsequent advanced reconnoissance.

The very valuable maps and reports of the route, and of the scene of operations, attest the very great energy and intelligence which Colonel Phayre has displayed in the performance of his duties.

Captain Holland, Assistant Quartermaster-General, has had charge of his department at Head-Quarters, and of all correspondence with the Land Transport Corps. Captain Holland.

In these duties Captain Holland's exertions have been conspicuous, and the exactness, promptitude, and ability with which they have been carried out deserve my warmest commendation.

Captain Holland afforded me great assistance in the reduction of the camp followers.

Major Baigrie, Assistant Quartermaster-General, an officer of ability and great energy, did very valuable service in the first exploration of the coast in October. During the campaign he has served as Assistant Quartermaster-General of the First Division, and been very favourably noticed by Major-General Sir Charles Staveley, in whose estimation of Major Baigrie I fully concur. Major Baigrie.

Captain Pottinger, Royal Artillery, Deputy-Assistant Quartermaster-General, was very useful with the reconnoitring party. Captain Pottinger.

During the campaign he has been attached to Head-Quarters, he has laboured with zeal, and shown ability in the performance of his duties.

Captain MacGregor, Deputy-Assistant Quartermaster-General, was employed with the advanced reconnoissance, and by his ability and energy proved himself a valuable Staff Officer. Captain MacGregor.

Captain Fawcett, Deputy-Assistant Quartermaster-General, was also for some time usefully employed with the advanced reconnoissance. Captain Fawcett.

Major Goldsworthy, Brigade Major of Cavalry, has neglected no occasion during the campaign of making himself useful. Major Goldsworthy.

Dr. Lumsdaine, when Sanitary Officer at Zula, by introducing a good system and rules for conservancy, and seeing them carried out, contributed in a very important degree to the healthiness of the garrison and civil inhabitants. Dr. Lumsdaine.

I am greatly indebted to Doctor Lumsdaine for his constant attention while forming part of the Head-Quarter Staff, and for very valuable voluntary service in many extra duties during the Expedition.

Major Maude, Deputy Judge Advocate-General, has performed the duties of his office to my entire satisfaction, and has frequently rendered me useful services whilst attending me during the campaign. Major Maude.

Captain Young, Senior Paymaster in Abyssinia, has had very responsible duties in keeping the Commissariat, the depôts, the many columns, and the small posts supplied with money to meet every emergency, duties which he ably and satisfactorily performed. Captain Young accompanied the advance to Magdala. Captain Young.

Captain Hand was nominated to the charge of the Highland Train, when the dimensions of the Transport Corps necessitated the appointment of a sub-director on the highlands. Captain Hand and Officers of Highland Train.

He had the advantage of the trained muleteers from the Punjab, many of them old soldiers, and accustomed to discipline.

The conduct of the muleteers has generally been extremely good, and the services of the Highland Train has been performed in a manner which reflects great credit on Captain Hand, and the officers immediately under him.

Captain Griffith, Captain Bainbridge, and Captain Twentyman, Captain Hodges, and Lieutenant Ross, have distinguished themselves by their zeal and activity, and deserve special notice.

Captain Hand mentions favourably Lieutenant Gascleu, his Staff Officer, Lieutenants Ramsbottom, Mortimer, Ryves, and Abadie.

Officers of Intelligence Department.

In a separate report I have detailed the special services of the Officers of the Intelligence Department, which have been performed immediately under my own orders, or under the Divisional or Brigade Commanders.

I will, therefore, only record here that Mr. Münzinger, the Acting British Consul of Massowah, a gentlemen well versed in the languages of Abyssinia, and the earliest in the field, has rendered valuable services, both in the early reconnoissance and throughout the campaign.

Major Grant, C.B., whose African laurels had already been won in another field, Captain Moore, an accomplished Oriental scholar, Meer Akbar Ali; all of these gentlemen have performed very important duties, requiring great tact and judgment.

Major Roome, Bombay Staff Corps, Colonel Brazier, Retired List, have also performed very valuable services.

It would be difficult to enumerate all Captain Speedy's services,—his familiar knowledge of the Amharic language and character of the Abyssinians have rendered him invaluable as an interpreter and envoy. He was already well known by character, and he was immediately accepted by the Abyssinians as a guarantee of good treatment and mutual confidence.

Officers of Sir Robert Napier's personal staff.

I have received the most valuable assistance from the officers of my Personal Staff.

I selected Colonel Fraser, V.C., Commandant at Head-Quarters, for the charge of the outposts, a duty of special importance in so intricate a country, which Colonel Fraser performed with increasing vigilance, and to my complete satisfaction.

Lieutenant-Colonel Dillon, Military Secretary, has been by my side, and has shared my labours from the first preparations for the expedition to its close. I cannot too strongly express my obligation to him.

Lieutenant Hozier, Assistant Military Secretary, was obliged, to my regret, to leave the force from ill-health, during the advance beyond Antalo, but not before he had shown himself to be an officer of great energy and practical ability.

Lieutenant Tweedie, Political Secretary, has performed his special duties with great ability and to my entire satisfaction.

Lieutenant Tweedie attended me in the action of Arogie and at Magdāla.

Captain Arbuthnot, Extra Aide-de-Camp (latterly Assistant Military Secretary), was sent on a special mission to Egypt and Syria, which he executed with much judgment, and returned in time to be present at Magdāla.

My Aides-de-Camp, Lieutenant W. Scott, Lieutenant R. Napier, and Cornet Lord Charles Hamilton, and Cornet Kennedy, 18th Hussars, have afforded me every satisfaction in the performance of their duties.

Lieutenant W. Scott, with my cavalry escort, took part in the investment of Magdāla.

Naval Officers.

I am very happy in this opportunity of saying how cordially Commodore Heath has conducted the naval duties of the Expedition in connection with the army.

The spirit of their Commander has been emulated by the officers and men of the Royal Navy under his orders.

The labour, under a hot sun, of landing supplies and water, and re-embarking troops, followers, and cattle, has never for a single day ceased since the arrival of the first transport in Annesley Bay.

The history of the labour undergone, by which vast quantities of stores and many thousands of men and cattle have been landed and re-embarked without accident, can only be truly told by Commodore Heath himself; but I have much gratification in

expressing, on the part of the army, how greatly we are indebted to Commodore Heath and the officers and men of the Royal Navy.

Greatly too are we indebted to Captain Tryon, R.N., the able Director of Transports. His thoroughly efficient control of the large fleet under his direction, and his readiness of resource, relieved me from all anxiety in regard to his highly responsible and important office.

The campaign has been one of severe military labour from the first landing to the re-embarkation.

Every regiment of infantry carried its own pack of tools, and became pioneers, working hardly, whether in the long marches of the advance or the more trying monotony of the plains of Zula.

The port of Zula, with its landing piers; the railway, with its numerous bridges; the road through the Kumayli Pass to Antalo and Magdāla; the water supply at all the stations; the intrenchments at Adigrat and at Antalo; the Commissariat and transport lines, and the camping grounds, where the most perfect order was required to water quickly many thousands of animals; all formed one great military work on which the campaign has been supported.

It would be impossible for me to do full justice to the merits of each portion of the force.

All ranks and classes have been inspired with the same honourable spirit, whether in military labour or in conflict with the enemy, and have borne themselves as if success depended on their own individual exertions and devotion.

I beg permission gratefully to acknowledge the confidence placed in me by Her Majesty's Government for India, and the unhesitating promptitude with which all my requisitions have been complied with.

I am deeply sensible of the support and encouragement which I have received from His Royal Highness the Duke of Cambridge in every stage of the Expedition.

Enclosure in No. 6.

Major-General Sir Charles Staveley, K.C.B., to the Deputy Adjutant-General, Abyssinian Expeditionary Force, Magdāla.

Camp before Magdāla, 14th April, 1868.

Sir,

General Sir C. Staveley Report on advance upon Magdāla.

With reference to general orders of the 11th instant, I have the honour to report that I received orders to proceed on the morning of the 10th instant with the 1st Brigade under Brigadier-General Schneider, strength as per foot note,* from the Talanta Plateau

	Officers, and Rank and File.
* A (3rd Battery 21st Brigade) Royal Artillery	94
Royal Naval Brigade	87
10th Company Royal Engineers	21
4th King's Own Royal Regiment	473
1st Company Madras Sappers	77
Head-Quarters (3 Companies) Bombay Sappers	288
23rd Punjab Pioneers	600
27th Belooch Regiment, Head-Quarters (Wing)	260

across the Bashilo river, and occupy the height above the latter, in front of Magdála; also to cover a reconnoissance by Colonel Phayre, Deputy Quartermaster-General of the Force.

Four companies of Sappers were ordered to make a road for elephants up the height, and the A (3rd Battery 21st Brigade) Mountain Battery, under Lieutenant-Colonel Penn, and the Rocket Batteries, Naval Brigade, under Commander Fellowes, R.N., were to ascend the plateau, when a road was reported practicable by Captain Goodfellow, R.E., senior Engineer Officer.

The march proved a most distressing one for the troops, laden as they were, for want of transport, with great coat, waterproof sheet, and blanket. The ascent is very long and steep, and the animals carrying water being unable to keep up with the column, the troops suffered severely from thirst.

Engagement of Arogie, 10th April.

The Deputy Quartermaster-General having sent me a report that the King's Road up the Arogie Pass on our left was secure for guns and baggage, and which I forwarded to the Commander-in-Chief, his Excellency ordered them to proceed by that route, escorted by three companies of the 4th (King's Own) Regiment, one of the 10th Bombay Native Infantry, and one of the 23rd Punjab Pioneers. I had just arrived at the end of the ridge overlooking the road leading to the entrance of the pass, about one mile distant, when I was joined by his Excellency the Commander-in-Chief, who directed me to move the 23rd Bengal Pioneers, under Major Chamberlain, to the left, the more effectually to protect the head of the pass. This regiment had no sooner got into position than the guns from Fahla and Selassie (two of the three ambas which form the defences of Magdála) opened fire, and large numbers of men were seen streaming down the mountain. One portion of the enemy advanced with great confidence direct on our position, and another towards the pass, to attack the artillery and baggage now coming into sight.

His Excellency having sent me orders to prepare the troops to receive the enemy, I directed Brigadier-General Schneider to cause them to lay down their packs and advance: the 4th (King's Own) Regiment in skirmishing order, supported by the wing of the Belooch Battalion, a small detachment of Royal Engineers, and four companies of Sappers, covered by the Naval Rocket Brigade, which had just come up.

Our troops had to cross a narrow dip in the ground, and the 4th (King's Own) Regiment, while in the act of extending on the other side, came close on the enemy, drove back and dispersed him with great gallantry, killing and wounding a large number. The enemy came on with great courage, little anticipating the rapid effect of the Snider rifle and dash of our troops.

To the left the enemy pressed close up to the 23rd Bengal Pioneers, under Major Chamberlain, and the advancing Mountain Artillery and baggage under Lieutenant-Colonel Milward, R.A. He was received and driven back by the Pioneers with much loss, and the Mountain and Rocket Batteries on mules, under Lieutenant-Colonel Penn, R.A., and Commander Fellowes, R.N., which the enemy no doubt mistook for baggage, coming into action at this moment supported by a company of the 4th (King's Own) Regiment under Captain Kittoe, and another of the 23rd Bengal Pioneers under Captain Paterson, in skirmishing order, caused great destruction. Lieutenant Sweny, 4th (King's Own) Regiment, the baggage master, lost no time in parking the baggage, and the escort of the two companies, 4th (King's Own) Regiment, and one company 10th Native Infantry, coming into action under Captain Roberts and Lieutenant Durrant, 4th (King's Own) Regiment, assisted materially in driving off the enemy. This portion of the enemy being moreover in a hollow on the left of the position of the 4th (King's Own) Regiment, I directed Brigadier-General Schneider to move two companies to the edge of the plateau, thus taking him in flank.

Two of Lieutenant-Colonel Penn's guns, under Lieutenant Taylor, R.A., the Belooches, Royal Engineers, and Sappers, came into action towards evening, and assisted the Naval Rocket Battery to dislodge some sharpshooters who were annoying us from some cover on our right front.

Night coming on, and the enemy having almost disappeared, I withdrew the troops to a position selected by the Commander-in-Chief, where they bivouacked for the night. The 2nd Brigade joined us there towards morning.

British wounded.

I enclose a return of our wounded, all of whom were brought in early, and everything done for them that could possibly be required by Staff-Surgeon Madden, in charge of the field hospital of the 1st Brigade. A number of Abyssinian wounded were also brought in and attended to.

Enemy's losses.

I cannot ascertain with any degree of accuracy the enemy's loss, but as 375 dead, including King Theodore's Commander-in-Chief, were counted on a small part of the field, it is not unreasonable to estimate the killed and wounded at 2,000 men. The Galla Chiefs who had men in the enemy's ranks admit 700 killed.

Brigadier-General Schneider was most energetic in carrying out the orders conveyed to him. He mentions the assistance he received from the officers of his staff, viz., Captain Beville, his Brigade-Major; Captain Hogg, Deputy-Assistant Quartermaster-General; and Lieutenant J. G. McRae, Aide-de-Camp.

The following officers of my staff were most active during the action, and afforded me very valuable assistance: Lieutenant-Colonel Wood, Assisting Adjutant-General, Major Baigrie, Assisting Quartermaster-General; and Lieutenant Saunders, 20th Hussars, Aide-de-Camp. My Extra Aide-de-Camp, Captain G. Arbuthnot, R.A., whom I had detached in the morning, also rendered good service.

I wish to recommend to the favourable notice of the Commander-in-Chief, Lieutenant-Colonel Cameron, commanding the 4th (King's Own) Regiment; Lieutenant-Colonel Milward, commanding the division of Mountain Batteries; Lieutenant-Colonel Penn, commanding the A 21 Steel Mountain Battery; Commander Fellowes, R.N., commanding the Naval Rocket Batteries; Major Chamberlain, commanding 23rd Punjab Pioneers; Major Beville, commanding Belooch Battalion; Major Prendergast, V.C., the Senior Officer, with the Royal Engineers, and companies of Bombay and Madras Sappers and Miners; Lieutenant-Colonel Loch, commanding detachment 3rd Light Cavalry; Captain Roberts, commanding two companies 4th (King's Own) Regiment, Baggage Guard; Captain Kittoe, 4th (King's Own) Regiment, and Captain Paterson, 23rd Punjab Pioneers, commanding escorts to the Artillery; Lieutenant Sweny, 4th (King's Own) Regiment, Baggage-Master, and Staff Surgeon Madden, in charge of Field Hospital, 1st Brigade.

I forward a sketch of the ground and position of the troops during the action, also a return of officers and men recommended by Major Chamberlain, 23rd Punjab Pioneers, for distinguished conduct.

RETURN of Killed and Wounded in the Action before Magdala, on the 10th of April, 1868.

Camp near Magdala, 11th April, 1868.

	Officers wounded.				Men wounded.				Total.
	Killed.	Dangerously.	Severely.	Slightly.	Killed.	Dangerously.	Severely.	Slightly.	
4th King's Own Regiment	0	1	0	0	0	2	2	2	7
23rd Punjab Pioneers	0	0	0	0	0	2	5	5	12
Bombay Sappers	0	0	0	0	0	0	0	1	1
									20

The Secretary of State for India to His Excellency Lieutenant-General Sir Robert Naiper, G.C.B., G.C.S.I.

Sir, *India Office, London, 1st July,* 1868.

I HAVE the honour to acknowledge the receipt of your Excellency's Despatches dated the 12th of May and 1st of June, reporting the complete success of the Abyssinian Expedition, the return of the whole force in safety to the coast, and the re-embarkation of the greater portion of it.

2. I have received Her Majesty's gracious commands to convey to you Her cordial congratulations, and to tender to your Excellency and your gallant army Her Majesty's warm thanks for the service which you have rendered to the country.

3. The foresight evinced in your arrangements, the precision with which you have executed them, the combined promptitude and caution which you have displayed throughout the campaign, the skill with which you have conducted your communications with the native Chiefs, and the admirable spirit which you have infused into your troops, have enabled your Excellency to carry to a successful issue operations of an almost unparalleled character, overcoming physical difficulties such as few armies in modern times have encountered, and such as probably no army has ever surmounted with fewer casualties and a smaller loss of life.

4. Her Majesty has observed with special pleasure the care which has been taken to provide for the wants of the sick and wounded, and while rejoicing to learn that under the blessing of God the losses sustained in the campaign have been but trifling, desires me to convey to your Excellency Her thanks for this foresight, and at the same time to express Her gratification at hearing of the satisfactory progress of the wounded towards recovery.

5. Throughout the campaign Your Excellency has been well and ably supported by the Divisional and other Officers under your command, to whom, as well as to the Officers employed in the Political Department, I am commanded to express Her Majesty's warmest acknowledgments.

6. Her Majesty desires me to convey to the troops, both European and Native, Her hearty thanks for the zeal, good humour, patience, and fortitude with which they have supported the severe labours and privations of the campaign; for the admirable discipline which has distinguished the entire force; and for the gallantry displayed by those who took part in the final struggle.

7 It is with peculiar gratification that I find myself charged with the duty of conveying these acknowledgments to the native portion of the army. They have taken a worthy place by the side of their English fellow-soldiers, in an operation on which the attention of Europe has been fixed, and have given the world a striking proof of the extent to which India contributes to the power of the British Empire.

8. Her Majesty has observed with much satisfaction the cordiality with which the naval duties of the expedition have been conducted by Commodore Heath, R.N., and the officers and men of the Royal Navy. The records of your proceedings show to how very great an extent the success of the expedition has depended on this co-operation.

9. I have submitted to Her Majesty's Government your Excellency's recommendation that a pecuniary grant should be made to the troops in consideration of the gallantry they have displayed, and the hardships and losses which they have endured; and I have the pleasure to acquaint you that they have resolved on granting six months' donation batta to the naval and military forces.

I have, &c.

(Signed) STAFFORD H. NORTHCOTE.

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GENERAL INDEX.

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